# PETROLEUM WEEK

MAY 25, 1956

■ A McGRAW-HILL PUBLICATION

## America's Stake In Middle East Oil

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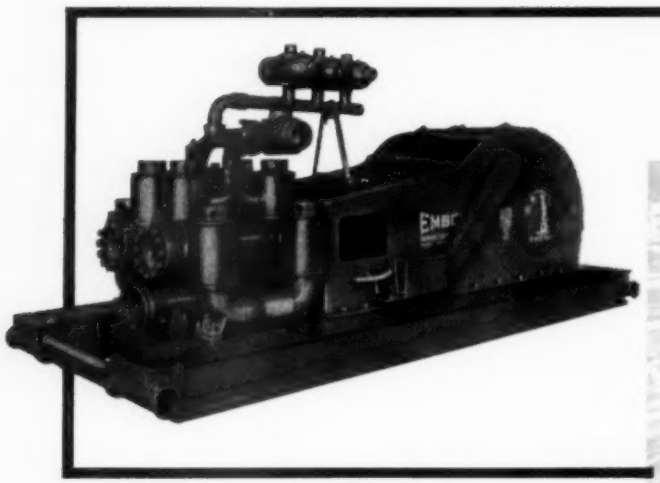

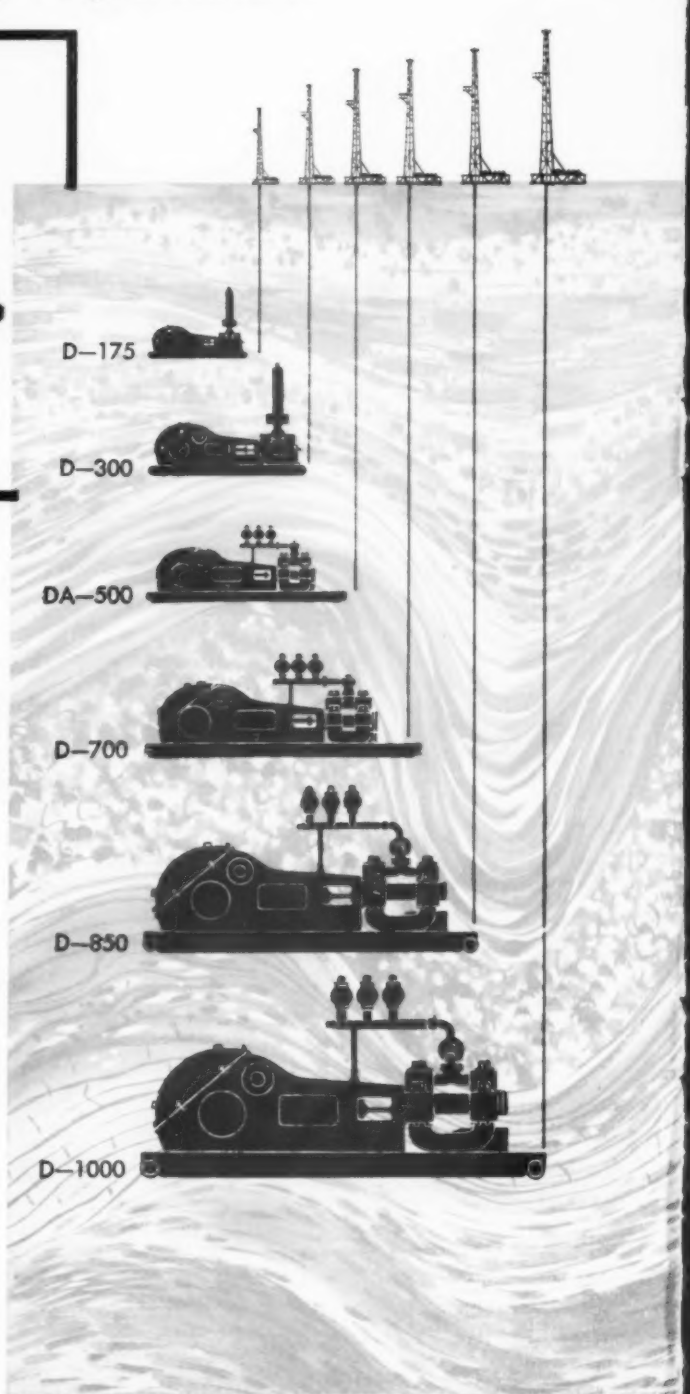


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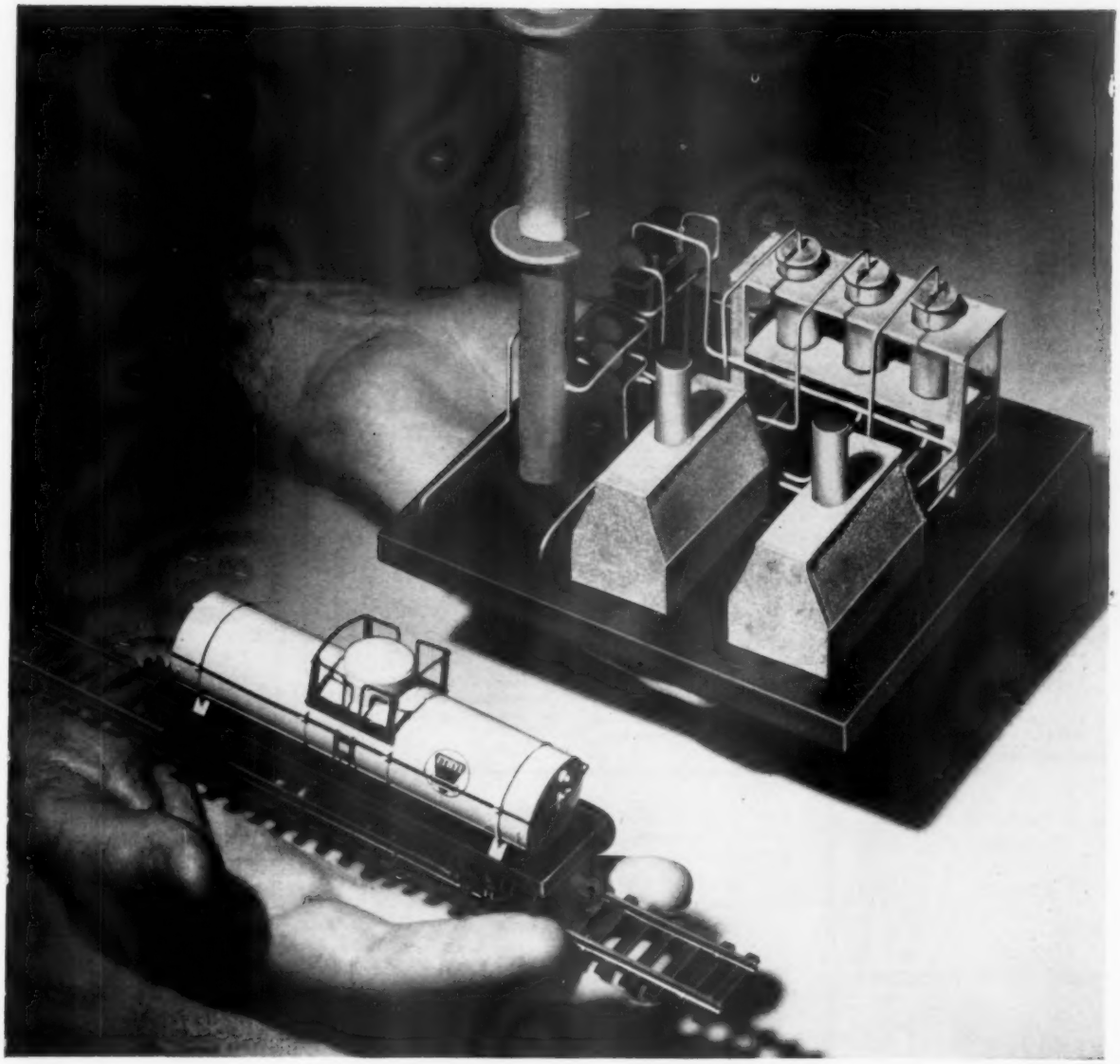

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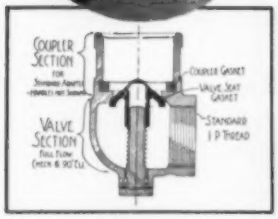


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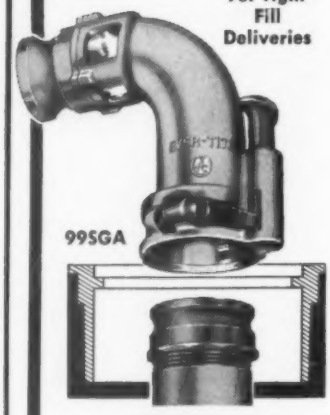
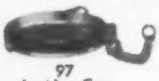



**EVER-TITE "99" COUPLER with Sight Gauge**



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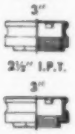
97 Adapter

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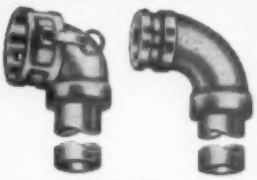

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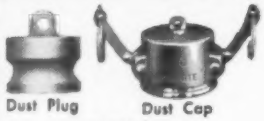


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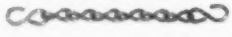

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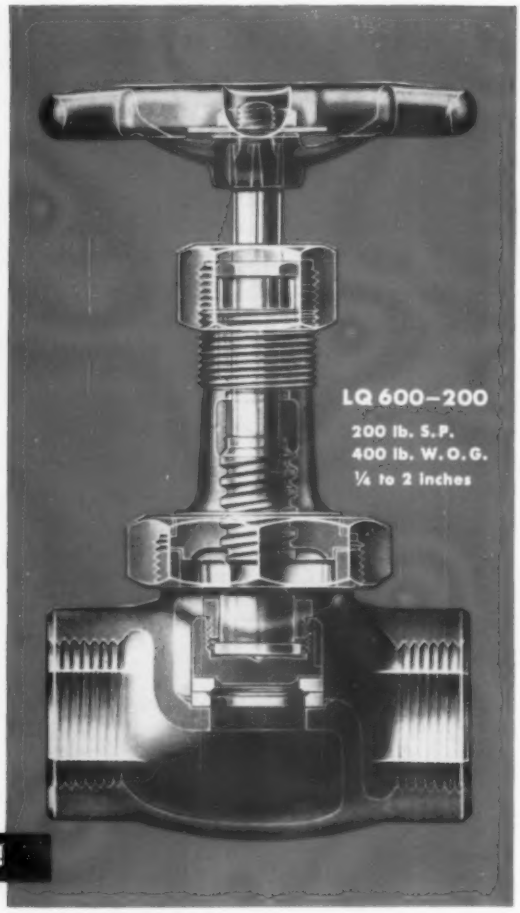


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May 25, 1956

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**Four parched, barren countries of the Middle East hold a major key to the free world's future: Oil.** The petroleum reserves of these four—Saudi Arabia, Kuwait, Iraq, and Iran—are fully three times as large as those of the rest of the world. If the Communists could get control of this oil, they'd have the free world by the throat. ...p. 18

•

**The Justice Dept.'s plan to hire 110 "cops" to ride herd on the Interstate Oil Compact Commission has hit a snag.** A Senate subcommittee trimmed the budget of $763,090 for this work down to a meager $25,000.

•

**A new scale for measuring gasoline octane ratings up to 120 appears to be on the way.** It is an extension of the current scale, which technically ends at 100. Although some refiners oppose it, agreement could come at a meeting of the American Society for Testing Materials, June 17. ...p. 11

•

**What the Supreme Court does in the next few days will have an immediate impact on offshore leasing activities.** If, before it adjourns June 1, the court issues a stay order against Louisiana officials, federal offshore leasing will continue. If not, development in the disputed zone may be stymied until the court settles the basic case next fall. ...p. 12

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**Are "extra" services provided by supply and service companies adding unnecessarily to drilling and production costs?** Some operators and supply firms are beginning to think this may be so. ...p. 9

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**Too much concentration of authority may be harmful, particularly as a company expands.** This was given consideration by Atlantic Refining in its "scientific decentralization," aimed at putting the right man in the right job—and giving him responsibility. ...p. 29

•

**Owners of the world's deepest well are trying to determine the extent of the pool they found.** Richardson & Bass et al are already drilling a test well about two miles east of the record-depth producer in south Louisiana. And they're studying valuable data gained from the first venture. ...p. 14

•

**Maintenance costs are important to a refiner, yet it's hard to measure their value.** Three engineers have come up with a formula which they think is more accurate than others generally used. Basically, it evaluates such costs by comparing them with replacement value of the equipment. ...p. 40

# Looking Ahead in Washington

McGraw-Hill
Washington
Bureau

May 25, 1956

**Percentage depletion is safe now, but there's trouble ahead.** Look what's happening to the tax-writing Senate Finance Committee. It's always been a conservative group, favorable to oil and gas percentage depletion. But the death of Sen. Alben Barkley left a vacancy—and it was filled by Sen. Paul Douglas (D., Ill.), who favors a cut. And the next two vacancies will go to two other industry critics: Sen. John Pastore (D., R. I.), and Sen. Albert Gore (D., Tenn.). Conservatives will still have the edge, but it's getting thinner.

**The new danger to percentage depletion could have been blunted.** Senate Majority Leader Johnson could have kept Douglas off the vital Finance Committee, despite his seniority rights. But the Texan recently laid his political future on the block to push the gas bill through the Senate. And he feels that a lot of oil men repaid him poorly by supporting Gov. Allan Shivers against him in the recent political contest in Texas.

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**The search for a new oil-imports formula is already under way.** Some U. S. oil officials believe the 1955 ratio of imports to domestic production might be a good replacement for the 1954 ratio. Here's their reasoning: 1953 was an unrepresentative year because of zooming imports. In 1954, both imports and U. S. production failed to experience a normal growth. The two came back into balance in 1955. Thus, say these officials, 1955 may be the updated yardstick for which Defense Mobilizer Flemming appears to be looking. Such a change would evoke a storm of protest from some segments of the oil industry.

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**The Navy is folding up on the offshore oil squabble.** The Office of Naval Petroleum Reserves has given up its fight for money with which to drill on San Nicolas Island. And it now recognizes that the Navy has no right to develop oil and gas reserves on outer continental shelf areas set aside for gunnery ranges. But it still claims this right on public lands set aside for the military, whether or not they are designated as petroleum reserves.

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**The Federal Trade Commission sees signs of a change in the marketing setup,** designed to solve problems posed by FTC's new policy on voluntary discounts (PW—Mar.2'56,p26). Since discounts apparently can be granted only to meet wholesale competition, FTC hears that various majors are considering these steps: (1) A "Feathering out" system, under which discounts vary with distance from the center of a price disturbance; (2) conversion to company-operated or consignment stations; and (3) development of huge company-operated superstations, to lessen dependence on independent retailers.

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**The Kefauver-Patman bill is going to the House floor.** The measure, which would end the validity of "good faith meeting of competition" as a full defense to charges of price discrimination, has been bogged down in the House Judiciary Committee. But Rep. Wright Patman (D., Tex.) has obtained the required 218 signatures to bring it to the floor without committee approval—a highly unusual feat. The bill has virtually no chance of passage, however, despite the fact that a majority of FTC now favors it.

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# What Do 'Free' Services Cost?

● Many oil field suppliers provide drillers and producers with "extra" services, such as frequent deliveries. The question is whether this boosts costs unduly.

● Some say toolpushers might help cut expenses, get better service, and keep abreast of new trends if they visited field stores more often.

**There is a growing feeling among some oil men that "extra" services furnished by supply and service firms may be adding unnecessarily to drilling and production costs.**

The problem arises, basically, from hard competition. Since World War II, there has been a steady increase in these extras.

The reason is simple: Supply and service companies are hustling after business.

In its most common form, the extras amount to making several separate runs to the rig to deliver items which might have been consolidated into one delivery—or which might have been picked up by the toolpusher himself.

**Supplying extras is a practice that gains momentum as it goes along, and it can get out of hand.** A supply company vice-president cites this example:

"A salesman starts hauling a little stuff out to the rig as an accommodation. This wears his car out faster. Then we buy him a pickup truck, but that's not enough, and we have to buy a bigger truck.

That means adding truck drivers, and so on.

"I believe that many of our customers think it is a bad practice that will ultimately cost more money than it does now."

**Supply and service companies are worried about the current situation and the trend it is taking.**

Here's how one field-store manager puts it:

"Our customers are demanding more and more service every day. What they don't realize is, they're paying for it indirectly.

"If we could take the men off half our cars and trucks and put them into the stores, we could increase our efficiency, teach our people more about our equipment, and cut down on the errors that are being made in sending out the wrong stuff."

**Some drilling contractors, too, feel that many "extra services" by suppliers are unnecessary—and add to over-all costs.**

A. W. Thompson, a Houston drilling contractor who is vice-president of the American Petroleum Institute's production division, has been making a point of this recently.

Thompson says there are too many salesmen visiting the rigs. These include routing "good will" calls and trips to deliver equipment that could have been picked up by the toolpusher.

A. W. McKINNEY, National Supply Co. president, urges more visits to oil field supply stores for mutual benefits.

Operators and contractors such as Thompson feel these "extras" are adding to their costs at the very time when normal costs of supplies, materials, and services are already skyrocketing.

**One reason why little has been done to trim down on "extras" is the fact that it's hard to pin down just what they cost.**

No one knows, for example, just how much a drilling contractor might save by having his toolpusher pick up many of the items he orders from the store.

So it's easy to get in the habit of telephoning in frequent orders or otherwise using the "free" services offered.

**A. W. McKinney, president of National Supply Co., thinks everyone would benefit if drilling and production people would make more use of suppliers' field stores.**

McKinney, in a speech to the National Assn. of Purchasing Agents during their Cleveland conference this week, said the store is an essential "bridge" between sellers and purchasers.

**He said more visits by toolpushers to field stores might help improve efficiency, in addition to trimming the cost of "extra" services.**

"The field store has a service to render your industry above and beyond the simple function of supplying you with machinery," he told his listeners.

"For instance, a big field store will carry from 10,000 to 12,000 dif-

ferent items in its inventory. Some of these will be new; others will be old—but with improvements . . .

"No field representative can possibly carry such equipment with him, nor can he possibly give the toolpusher or the driller what he can get in the way of information and service in the stores themselves."

**Visits to field stores help keep drilling and production personnel abreast of developments in equipment and services, he said.**

"How will your people know what is available, what new changes have taken place, if they do not visit the stores to see for themselves?" he asked.

"How will they find the new and improved productions that will help them do their job better?"

He pointed out that the suppply store traditionally has been a clearing house for information.

"It's a place where people go to keep current with the news, to get and exchange information, and to transact business," he said.

Another top man in the supply-manufacturing field sounded much the same note in a recent interview with PETROLEUM WEEK.

"If the industry wants the kind of facilities we think it needs in a field store, it should use them. If not, it's paying for something and not getting the full benefits of it," he said.

**Any change in the practice of supplying "extras" will depend on whether or not enough operators and contractors decide that "going to the store" will yield sufficient material benefits.**

Obviously, the suppliers will continue to meet competitive practices if those practices appear to be what the customer wants.

As one supply company executive puts it: "We'll meet competition, no matter what kind. We'll take it, up to a certain point, then we'll get rougher than the roughest guy."

McKinney feels that any over-use of extra services will tend to defeat itself. "In our economy," he said, "abuses and inefficiencies soon correct themselves. If people in a given industry do not do it, they very quickly find people moving in on them who do."

**Whether or not any change develops, it's clear that both suppliers and purchasers are giving more attention to the situation.**

With drilling and production costs rising, contractors are becoming more and more interested in finding ways to trim them down without losing efficiency.

# Petrofina Hikes Octanes, Price

**Canadian Petrofina is setting the pace for "super" grade gasoline in Eastern Canada with a boost in octane and price—of its premium fuel.**

The company introduced the new top-octane product last week with the claim that it is the "highest-octane of any premium-grade fuel." Though Petrofina is not saying what the octane rating is, indications are that it is at least two numbers above the average of 95.1 research-octane rating marketed in Montreal and Quebec.

Petrofina's move is unusual, since the company is the newest integrated oil firm in Canada and competes with the established larger companies.

The company's price for its new premium fuel is 1¢ a gal. above the top prices of other major suppliers.

Alfredo F. M. Campo, executive vice-president, told PETROLEUM WEEK that the move was an experiment to evaluate customer reaction.

Petrofina's jump to the highest-octane gasoline in Canada caught the industry by surprise. When the company entered Canada, it was regarded as a potential price-cutter to attract business from the larger marketers.

**Petrofina's boost in premium octane comes in the face of expectations in Canada that Imperial Oil, the Jersey Standard affiliate, and the biggest marketer, will introduce "Golden Esso Extra" in Canada.**

Campo says Petrofina plans to stick to a two-grade marketing system, regardless of whether or not competitors shift to three or more grades.

Under the two-grade system, says Campo, "we can produce a top-quality product for octane-conscious engines and a regular grade for price-conscious motorists."

**Petrofina is boosting its premium-grade octane by blending alkylate in its motor gasoline.**

The company, with a new 20,000 b/d refinery at Montreal East, has the largest alkylation capacity—1,425 b/d—in Canada. The only other alkylate plant is Imperial's 750 b/d unit at Calgary, Alberta.

# County Gets Tough in Permit Tiff

**When Magnolia Pipe Line Corp. put pipe under a Harris County (Tex.) road recently, it defied a county regulation that requires a permit and bond for such installations—an edict which is under legal attack by other pipeliners. County workers promptly ripped out the line (above). Magnolia then paid, under protest, in order to be able to put the line in again. The issue is pending in court.**

# Industry Clings to Octane Scale

● **Extension of octane numbers above 100 is termed "most suitable" by an API joint committee.**

● **But some refiners still prefer changing to avgas-type performance numbers.**

**Spurred by the accelerating trend to 100-plus-octane motor gasoline, the oil and automotive industries are nearing agreement on a yardstick for expressing the antiknock qualities of these "super" gasolines.**

This was indicated at the API refining meeting in Montreal last week, at a joint session of the association's petroleum-products and automotive-research committees.

These two API committees are not the ones to adopt a new "octane yardstick," however. The official promulgation agency for the oil and automotive industries is the American Society for Testing Materials.

ASTM meets June 17 at Atlantic City. And if it agrees on a new yardstick at that meeting that yardstick will then be used by the oil and automotive industries.

The two API committees, however, paved the way for early adoption of a new scale by selecting one of several that have been under study as being the "most suitable."

**The new octane scale being considered is a direct extension of the present scale, and the numbers above 100 would be called octane numbers.**

The present scale is based on a reference material consisting of a blend of iso-octane (with a rating of 100) and normal heptane (with a rating of 0).

The proposed extension is based on a rating method derived by General Motors Research Corp. It uses the existing method to measure antiknock quality up to 100. For numbers over 100, the reference material is a blend of tetraethyl lead in iso-octane.

The reference material is the same as that used to measure the knock characteristics of aviation gasoline. The test results for motor gasoline, as in the case of avgas, are expressed in performance numbers. For motor gasoline, however, they are then converted to octane numbers by a formula developed by GM.

**The primary advantages to the oil industry of a direct extension of the present scale are that it retains a term that is familiar to customers and that the proposed scale is readily available.**

In the words of Warren M. Wiese, of General Motors, the scale is "our compromise, as the best way to match the practical requirements for an octane scale extension at the present time."

The conversion formula was developed by Wiese.

• **Marketers,** particularly, will find the use of an extension of the present scale more meaningful to the motorists who are accustomed to thinking in terms of 100-octane as a mark of perfection.

R. C. Alden, of Phillips Petroleum Co., chairman of the API petroleum products committee, put it bluntly in Montreal last week: "The most important feature of any new antiknock scale is what it will mean to the many laymen in the oil and automotive industries and to the general public—not what it may mean to antiknock testers and engine experts."

• **Refiners** will find advantages in the direct scale extension in that (1) it uses familiar reference fuels, and (2) it is continuous with respect to the present octane scale.

This means that the numbers immediately above and below 100 have nearly the same meaning relative to engine performance. In other words, the numbers are about the same size.

The GM scale is not strictly continuous at 100 with the lower scale. But the break is relatively small. The GM formula for converting its performance numbers is based on the average relationship of performance numbers to octane numbers in the octane range between 95 and 100. Because the difference in performance number values between 99 and 100 is greater than the average difference, a slight discontinuity exists at 100-octane.

• **The entire oil and automotive industries** would find some advantage in the immediate availability of the new scale that would result from direct extension of the present scale.

Premium gasoline of 100-plus octane rating is ready to be marketed over a wide area.

In a technical sense octane ratings above 100 are not correct, and the present use of octane ratings above 100 could cause confusion. As B. B. Turner, of Ethyl Corp., said to the joint API committees:

"The hope is expressed that agreement on a sound extension will be reached before some petroleum company adopts a 'wild' scale for advertising its products."

**Many refiners see limitations in a direct extension of the present octane scale. Their objections are both technical and economic. Their two chief objections:**

• The direct extension as proposed by GM uses the upper end of the scale for its conversion. As a result, the differences between adjacent numbers above 100 would have roughly the same value as those between 95 and 100 today. Since a single number's advance at this level is far more costly to achieve than at lower octane levels, many refiners are a bit unhappy.

• The formula for extending the scale imposes a limiting value of 120-octane (iso-octane plus 6 c.c. of TEL in the reference fuel). The opponents of direct extension argue that such a limitation favors the auto maker in that substantial increases in antiknock quality requirements can be built into future engines, while it would appear that only a slight increase can be made in antiknock values assigned to fuels.

**Because of such limitations, some companies prefer using a straight performance-number method of measuring antiknock quality, similar to the one used to rate avgas.**

A report presented at the Montreal meeting by L. W. Moore, of American Oil Co., shows that use of a performance-number scale results in more uniform quality costs over the anti-knock range than an extension to the present scale.

The performance numbers used in rating aviation gasoline are related to power. The numbers used in the scale are uniform in size, and the increment in refining costs between numbers is more uniform.

**An adoption of a performance number system, however, would require either (1) that it be adapted for use to measure gasolines below 100, or (2) that the oil industry would have to talk of octane numbers up to 100 and then switch to performance numbers.**

So far the various oil and automotive committees working on the octane-yardstick problem have opposed the use of different scales for above and below 100.

# Offshore Oil Tug-of-War Continues

**The offshore boundary dispute between Louisiana and the federal government was headed in three directions this week: state court, federal district court, and the U. S. Supreme Court.**

The state, which last week succeeded in forcing a postponement of a federal lease sale, is continuing to fight a delaying action to stop all activity in the disputed zone until the dispute is finally resolved.

Federal authorities, on the other hand, are trying to clear the way for continuation of their leasing activities. Here is the way things stood at midweek:

**• A state court is being asked to take action which, in effect, would not only continue to block the proposed federal lease sale, but would also bar certain oil companies from areas already leased from the U. S.**

The state court judge, Mark C. Pickerel, postponed until May 31 the request to make last week's temporary injunction permanent.

The original petition filed in the state court would prohibit any "trespassing" on disputed offshore areas. These include approximately 283,000 acres already leased by the federal government long before May 15, as well as the 355,000 acres that were to have been put up for bid on that date.

Since the federal government has not made a similar move to block state offshore activity, it appears that oil companies with state leases in the twilight zone can continue operating while those with federal leases can not.

There's another complicating factor: The petition in the state court specifically names 25 oil firms that would be enjoined from offshore work. Yet there are about 20 other companies with federal leases that were not named, and presumably are not affected.

**• A federal court in Louisiana may clear up some of the confusion at a hearing May 29.**

At this hearing, the state will petition that the entire case against the 25 oil companies and the government employees be turned over to state courts.

Federal attorneys will argue that the state action should be overruled entirely, awaiting final U. S. Supreme Court ruling on earlier action still pending before it.

Two basic points to be argued at the May 29 hearing are whether the 25 companies named in the original state action are restrained from producing oil from wells already drilled, and whether they are restrained from drilling in areas leased before May 15.

**• Meanwhile, federal attorneys are asking the U. S. Supreme Court to move quickly to break the current deadlock.**

Attorney General Herbert Brownell filed a motion with the court this week in which he claims the state is seeking to circumvent the jurisdiction of the Supreme Court by having the same dispute adjudicated in the state courts.

"The state court is without jurisdiction to interfere with the conduct of officials of the U. S. in performance of their official duties," Brownell said.

**The Supreme Court is being asked to issue an injunction restraining Louisiana from trying to get or to enforce any injunction against "trespassing" in the disputed zone.**

The Justice Dept. points out that a case aimed at settling the boundary dispute once and for all is already before the Supreme Court. In this case, the federal government claims the Louisiana boundary extends only three nautical miles seaward. Louisiana claims three leagues (10½ mi.). The state has until June 25 to file its answer to this basic suit.

**Justice Dept. attorneys say development of the offshore area will be delayed indefinitely if dual litigation continues to freeze activities there.**

Further, these attorneys claim, lessees will suffer "great losses" in being prevented from developing their existing leases.

**The U. S. attorney general wants the dispute removed from state court jurisdiction before the Supreme Court adjourns for the summer.**

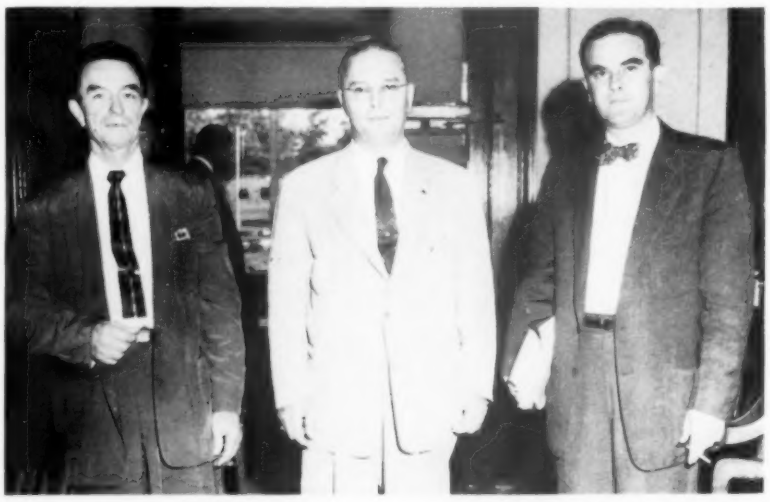
Unless this is done now, he points out, federal offshore authorities may have their hands tied until the fall session of the Supreme Court.

If the court has insufficient time to rule before its June 1 adjournment, he asked that it at least order a stay of the motion. This, in effect, would stymie the state until fall.

**State officials, on the other hand, are fighting for time and are employing all delaying actions possible.**

Edward Carmouche, special assistant to the attorney general, said this week: "We feel the federal government is trying to take an unfair advantage in this case. When they filed suit against the state back in January, they admitted that a dispute exists. Then, after this admission, they commissioned their agents to go ahead and lease property in the twilight zone. This could cost the state untold amounts of revenue in the interim before final decision is made on the boundary dispute. That is why we could not permit the federal leasing to continue."

**Even if the Supreme Court does stay the state court order, Washington observers feel that a cloud will hang over any new lease sales until it rules on the basic case.**



**KEY FIGURES in Louisiana's fight with the U. S. over offshore boundaries are these state officials (left to right): Scott Wilkinson, former assistant attorney general and now special counsel; Fred LeBlanc, outgoing attorney general; and Edward Carmouche, special assistant to the incoming attorney general.**

# What's New / IN THE INDUSTRY

## Dresser Will Continue Turbodrill Development

**Dresser Industries, Inc., is going ahead with its own development of the turbodrill despite the government block on its proposed exchange of technical data with the Soviet Union,** President H. N. Mallon said last week.

Sinclair Weeks, Secretary of Commerce, gave national security as the ground for denying an application by Dresser for an export license. The license would have permitted Dresser to give the Russians technical data on rotary rock drill bits in exchange for data on Soviet turbodrills (PW—Mar.9'56,p10).

In commenting on Weeks' action, Mallon said Dresser's proposed arrangement with the Russians "gave them nothing they didn't already have, and would have given us technical information of value and many years of executive field experience . . .

"Although we do not agree with the technical findings of our Commerce Dept., and neither do oil people we have consulted, we will cooperate with the Commerce Dept. in every respect and will abide by its ruling."

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## Ask Rangely Cutback

**Operators in Colorado's Rangely field have been asked to cut oil production 10% to reduce "excessive" flaring of gas.**

The state's Oil & Gas Conservation Commission called for the voluntary cut pending a hearing on conservation measures June 25. Warwick Downing, commission chairman, said "no material progress" has been made toward unitization of the field, "with the result that flaring of gas has reached approximately 30-million cu. ft. per day and may rise considerably in the near future."

Downing added that "the situation has got way out of hand." He said if present wasteful practices were not stopped, the field's future output would be cut from 2-billion to 200-million bbl. of oil.

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## New Type Offshore Rig

**A new design in seagoing drilling rigs—a combined barge and floating drydock—has been announced by John W. Mecom,** independent oil operator.

The self-contained unit has been tested successfully in 29 ft. of water off Cameron Parish, La., Mecom reports. Operations were carried out from a submersible drilling barge supported on a 1,400-ton floating drydock.

The $800,000 barge was built by Levingston Shipyards, Orange, Tex. In operation, the drydock picks up the barge and carries it to the drilling site. It then "cradles" it during drilling and completion operations.

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## Allowables Cut

**June allowables for Texas and New Mexico have been cut to 3,261,251 b/d and 277,618 b/d respectively.**

The Texas quota is down 75,004 b/d from the May level. The Texas Railroad Commission set a 15-day producing schedule, following requests by most buyers for cuts in allowables.

The commission also continued reduced producing rates in several West Texas fields affected by the Cities Service refinery strike.

The New Mexico allowable is down 5,435 b/d from May.

•

**A favorable tax ruling from the Internal Revenue Service has cleared the path for Atlantic Refining's purchase of Houston Oil Co.** A question over tax treatment of Atlantic's oil production payments to Houston Oil had been delaying the transaction.

Preliminary signing of papers this week in Wilmington, Del. and next week in Houston will make possible final closing of the $200-million deal in Wilmington June 6.

•

**The Seafarer's International Union has made another bid to organize boat and engine personnel of offshore drilling units in the Gulf area.**

SIU petitioned the National Labor Relations Board last week for permission to conduct a bargaining election among employees of The California Co. Calco currently is the largest offshore operator in Louisiana.

Lindsey J. Williams, SIU port agent in New Orleans, says the union is not seeking jurisdiction over roughnecks and drillers, but only over seamen and engineers.

NLRB is investigating validity of challenged votes in SIU's bargaining election last month among employees of Tidelands Marine Service Co.

•

**The National Oil Jobbers Council has shelved a proposed motion for congressional investigation of oil's percentage depletion.**

Opponents of the proposal, which was tabled by a 14-10 vote at the Atlanta meeting last week, said such an investigation might place jobbers in a "worse condition."

The proposal did not attack percentage depletion, as such. It did seek, however, to prevent resulting benefits from being used to subsidize marketing operations.

•

**Best guess now is that the National Petroleum Council will skip its regular spring meeting and hold a joint spring-summer meeting sometime late in June.**

NPC's regular schedule of meetings has been disrupted by the resignation of Interior Secretary Douglas McKay. An apparent lack of urgent problems also has tended to lessen pressure for an early meeting.

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**A 98-mi. plastic pipeline system will soon carry natural gas in West Texas. It's a 2-in. line, just installed to fuel 200 irrigation pumps for members of the Swisher-Castro Counties Farmer Co-op Society.**

The line is made of Kralastic, a blend of Copolymer styrene and rubber developed by the Naugatuck Chemical Division of United States Rubber Co.

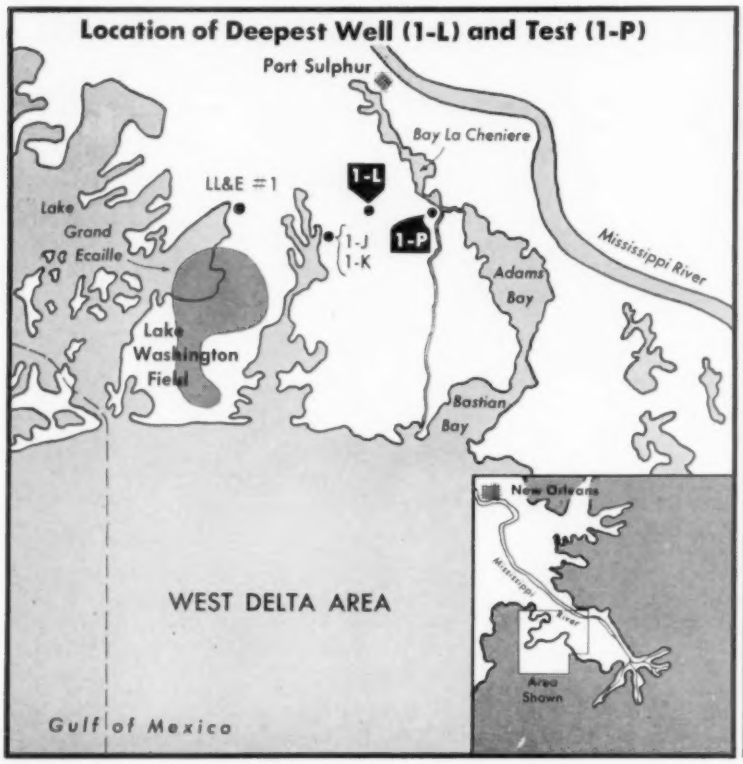
Dimmitt Ditching Service installed the line in 31 working days.

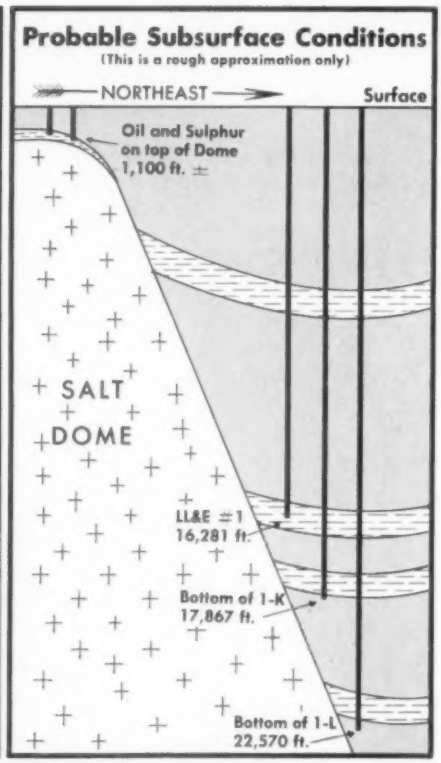
•

**Piston-powered air transports are far from obsolescent,** according to an Esso Air World survey of commercial airline orders.

The survey shows a total of 546 piston-powered aircraft ordered for delivery through 1958. In addition, 519 propeller-turbine transports will be delivered through 1960.

In the category of pure jet transports, the survey discloses that 226 have been ordered by the U. S. and foreign airlines for delivery in 1958, 1959, and 1960.





Probable Subsurface Conditions
(This is a rough approximation only)
NORTHEAST
Surface
Oil and Sulphur on top of Dome 1,100 ft. ±
SALT DOME
LL&E #1 16,281 ft.
Bottom of 1-K 17,867 ft.
Bottom of 1-L 22,570 ft.

*Second deep test started as . . .*

# Owners Try to Evaluate Deep Oil Zone

**A new deep test approximately 2 mi. east of Richardson & Bass et al's 1-L, in Plaquemines Parish, La., is expected to shed new light on the world's deepest oil discovery.**

The test is Richardson & Bass et al's 1-P (map), which is to be drilled through an old 11,810-ft. dry hole. The operators, Richardson & Bass, John W. Mecom, and Freeport Sulphur Co., are using R&B's Rig 25, the same big unit that drilled the world's deepest producer, the 1-L.

The 1-P is expected to be drilled far below 20,000 ft. in an attempt to extend this deep production of a huge salt dome.

This week the bit was cutting below 10,000 ft., reaming out the old hole to 12¼-in. diameter to a depth of around 12,000 to 12,500 ft.

**Whether or not the new test makes a well, one thing of vast significance to the petroleum industry has already been proven: Crude oil can and does exist at depths below 20,000 ft.**

The world's deepest producer, the 1-L, which was finally completed last week from the middle Miocene sands for 207 b/d from 21,419-65 ft. (PW—May18'56,p18), shattered the old belief that any production found at such depths would be transformed into condensate by the tremendous pressures and temperatures. The 1-L is bottomed at 22,570 ft.

The new test is needed to help the operators properly evaluate the physical size and aspects of the deep new oil picture disclosed by the 1-L.

**But the confirmation test won't answer all of the questions about the reservoir that are confronting the operators.**

For example, one factor that must be evaluated is the behavior of the discovery well itself. It first produced at the rate of 500 b/d from the interval at 21,443-65 ft. But within a few days this production had dropped to 200 b/d. The operators perforated a section a few feet higher—21,419-35 ft., and the well was completed for 207 b/d on 10/64-in. choke, with 244,000 cu. ft. of gas daily and a gas/oil ratio of 1,179/1.

Just how long the well continues to flow at this rate remains to be seen.

Also, operators must keep an eye on tubing and casing pressures, possible water encroachment, gas oil ratios, and close analyses of cores taken earlier up the hole.

**Drilling of the discovery well was done without the aid of any seismic data below 11,000 ft. Its successful completion was carried out with a combination of shrewd geological "guessing" plus a willingness to gamble.**

As a matter of fact, the 1-L was almost abandoned at 17,500 ft. as a dry hole. But the operators decided to drill on down and see what they could turn up. From that point on, the drilling operation was a matter of faith more than anything else.

The area of the discovery well is east of Lake Washington field, which lies on top of and on the flank of a big salt dome. There is oil and gas production on top of this dome, from about 1,100 ft. On the flanks, oil production ranges down to 16,000 ft.

Freeport Sulphur Co. mines sulfur from the top of the dome.

Eons ago, as the Lake Washington

salt dome thrust upward through the earth like a thick, blunt pimple, it shoved through the various subsurface strata, tilting and breaking them.

The shallower oil production lies just above the caprock on top of the dome. But around the sides of the dome there are layers of permeable sands capable of bearing oil and gas.

As the oil migrated upward, it was accumulated in these sands between impermeable layers of shale and was trapped against the impermeable sides of the dome.

In January, 1951, Richardson & Bass drilled their 1-J L. L. & E. to a total depth of 13,050 ft. Finding no signs of oil or gas, the operators plugged and abandoned the test.

Meanwhile, John W. Mecom, Houston, had drilled his 1 L. L. & E. in the north flank of Lake Washington field to 16,281 ft., obtaining production in sands older and deeper than any sands penetrated in the 1-J.

It was noted that the corresponding sands in the 1-J were about 900 ft. "higher," structurally, than in the 1 L. L. & E. Therefore, the chance was excellent that deeper drilling in the 1-J would also bring in production.

Richardson & Bass, Mecom, and Freeport Sulphur joined forces and went back into the 1-J, terming it the "1-K." This well was drilled to 17,867 ft. and substantial shows were found around 17,500 ft. The well was abandoned, however, because of mechanical difficulties.

The 1-K location was a close offset to leases held by Humble, and a farmout was obtained from that company. The partners then spudded in the 1-L, which was to become the world's deepest producer. The original objective for the 1-L was 17,500 ft.

Up to this time, the operation was based entirely on subsurface geological interpretation and "educated guessing." But at least there was something to go on—the experience received from drilling the three previous wells.

However, at 17,500 ft., the 1-L was dry. That's when the partners decided to drill on down—with no real idea of what lay below—and see what they could turn up.

**Just what type of reservoir holds the world's deepest oil production is a matter of conjecture at the moment.**

The assumption is that the salt dome slopes off in a "normal" away from its cone. If it continues this normal sloping (drawing) to the depth of the 1-L, the well is fairly close to the cone, indicating almost certainly that the production is coming from a salt-dome flank-type oil trap.

But there is some opinion, although it's not widely or strongly held, that the well may be actually producing from a separate closed, high structure.

No cores were taken in the 1-L at its producing depth, the last being from 20,778-91 ft.

Long interpretation also is difficult in pinpointing exact depths of possible producing zones in the 1-L. Plenty of "history" exists in the area on logs from 13,000 ft. up, but below that none is available.

Charts of these logs represent the averages of factors involved, and, by combining them with the operators' actual experience, it is usually possible to interpret a log with confidence.

But no log run has ever before been taken at such depths, and under such pressure and temperatures. So there's a good chance that there may be some distortion.

**Even as the second test was reaming below 10,000 ft., adding machines in the offices of the three partners were still totaling up the high costs of the discovery well.**

As of May 4, the total cost of the 1-L was $2,472,780.54. By the time all costs are in, the well will run around $2½-million.

Of this cost, $654,848 was spent on drilling mud and its services; casing costs ran to $400,000; and the high-test christmas tree, alone, cost $40,000.

## Louisiana Mulls Proration Change

**A new system has been suggested by industry representatives to bring Louisiana's crude-oil production into line with economics.**

At a special meeting called by Conservation Commissioner John B. Hussey in Baton Rouge last week, representatives were in agreement, basically, that the state's system of allocating oil production needs to be overhauled because of the economic pressures being put on by consistent cuts in the "per well" allowables.

These suggestions were made:

(1) Setting up schedules based on field reserves in relation to well depths and market demand;

(2) Establishing a formula based on depth and acreage for the three producing areas—north, south, and offshore—setting allowables over a three-month period instead of one-month period; and

(3) Setting a minimum per-well allowable, based on the cost-depth yardstick.

**No formal action was taken by the conservation commissioner on the industry representatives' proposals, however.**

The group will meet again, follow

**And gravity, when properly interpreted, can give you a clear, fast picture of underlying geology. New techniques in gravity work, and magnetic work as well, are constantly being applied by GMX crews, both on land and sea, in their search for oil—a search that has been carried on continuously since GMX entered geophysical exploration in 1925.**

**Gravity Meter Exploration Co.**
**Houston, Texas**

GMX

*A. C. Pagan*
*L. L. Nettleton*
*N. C. Steenland*
*M. W. Baynes*

ing a study of information necessary in carrying out the cost-depth-reserves survey.

Hussey said he would announce a time and place for the next meeting following completion of the survey.

**Louisiana's basic allowable problem has been the addition of an average of 15,000 b/d each month to available production against a market increase of only a little more than 3,000 b/d each month.**

"If this were continued," said Hussey, "it would give Louisiana an increase of about 37,000 b/d of production over a year's time, although the potential production at prevailing allowables would be five times that figure."

Allowables will be a "living problem for many months to come," Hussey told the 100 industry representatives who attended the meeting.

He reviewed the history of per-well cuts since March, 1953, and pointed out that under the Texas proration system, Louisiana's wells now would be on a 12-day per month production schedule.

"Louisiana has cut allowables per well more than any other state," Hussey said.

# What's New / IN PRODUCTION

## Delhi-Taylor, Navajos Reach Agreement

**An exploration and development contract covering 5-million acres of tribal lands has been signed by Delhi-Taylor Oil Corp., Dallas, and the Navajo Indian Tribe.**

The agreement must be approved by the Commissioner of Indian Affairs before it becomes effective. It was conceived and initiated by tribal officials, and provides for a 50-50 arrangement whereby the Navajos will provide lands and Delhi-Taylor as operator, will supply personnel and funds for oil development.

Negotiations first got under way last October.

The agreement is a "new approach" to exploring for oil and gas on Indian lands, according to Paul Jones, chairman of the Navajo Tribal Council. Under the agreement, the Navajos will benefit in several ways:

(1) Exploration and development of potential oil and gas reserves should be stepped up over the present rate;

(2) The Navajos' share of oil income will be greater than in the past; and

(3) Employment will be provided for members of the tribe.

Another benefit would be the incidental discovery of water, not necessary for drilling, which would be made available to the tribe, Jones says.

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## Gulf Expands Research

**An expanded production-research program has been launched by Gulf Research & Development Co.** at Harmarville, Pa. It will be conducted by 150 scientists, engineers, and technicians. The main purpose: to improve recovery of oil.

Some of the specific aims will be to step up the percentage of oil recovered from existing fields, and to speed up the drilling of new wells at lower cost. Faster and cheaper movement of oil and gas are also objectives of the program.

The company says it will build two new structures at a cost of $1.5-million, to accommodate additional staff workers.

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## Oil Regulation Broadened

**The Texas Railroad Commission's power to regulate drilling on small tracts has been broadened by a recent action of the U. S. Supreme Court.**

The high court refused to interfere with a decision of the Texas Supreme Court in the case of Ryan Consolidated vs. Pickens Oil.

The decision involved Rule 37, which gives the commission discretionary powers on exceptions to well spacing patterns.

The Texas high court had held that, under the law, the owner of a tract of land adjacent to another tract on which a well is drilled has no right to share in the profits of that well.

Ryan, which owned lots next to Pickens' property, sought "equitable compensation" when the commission ruled that the only permissible well should be drilled on the Pickens property. The case has been in the courts for about ten years. Two law-suits have been involved.

The U. S. Supreme Court's refusal to interfere means that Pickens has exclusive production rights.

The property involved is in Hawkins field of Wood County, near Dallas.

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## Says Railroad Interferes

**Union Pacific Railroad is hampering oil development and exploration in 13 counties in Colorado, according to State Sen. William E. Bledsoe (R.)** in a resolution offered in the Colorado senate.

The resolution declares the railroad "has reserved to itself all coal and other mineral rights, including oil rights," in many of the sections for 20 mi. on each side of its right-of-way. Those lands were sold years ago by the railroad, although it reserved the mineral rights at the time of sale.

The state senator says the railroad's policy in leasing land for oil exploration and development "has been too demanding, with the result that very little drilling for oil has been undertaken in areas in which the railroad company holds such mineral rights."

He has asked the state senate to advise railroad officials that leases demanded by it are "unreasonable" and that the railroad should not charge higher royalties than the usual 12½% the state charges for similar leases.

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**Winona Oil Co., Tulsa, has started a five-well wildcat drilling program in Renville and Bottineau counties, N. D.** The prospects, located following seismic work, will be drilled on acreage farmed out from Carter Oil Co. and Phillips Petroleum Co.

Dan Marken Drilling Co., of Casper, Wyo., has already moved a rig into the area for the first test, in SW SW 22-164n-80w.

This year is expected to be one of the best wildcatting years in the history of the Williston Basin. More than half of the wildcats are expected to be drilled on farmouts.

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**Drilling activity is increasing in Wyoming, now that fairly good weather is expected to stay for awhile.** Last week, 35 new tests were announced, representing a 54% increase over the previous week. Seven of them will be wildcats.

The upsurge of activity that has been going on during the last three weeks is a seasonal one. Most operators seem to agree that it will continue to build up. In spite of this, however, the drilling pace does not match the

rig activity at this same time last year.

There were 72 rigs running in Wyoming last week, compared with 76 a year ago.

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**A usable engineering technique has been developed for more accurate analysis of electrical logs in freshwater areas,** according to a paper presented by three Schlumberger Well Surveying Corp. men. They delivered a paper on the subject at the Casper (Wyo.) meeting of the petroleum branch of the American Institute of Mining, Metallurgical & Petroleum Engineers.

An excess of calcium and magnesium salts in solution in fresh water has long been a hindrance to interpretation. The paper described field tests confirming laboratory experiments, using the concept of an "equivalent resistivity" of the water present in formations. It was presented by M. Gondouin, M. P. Tixier, and G. L. Simard.

H. M. Bush, of The Texas Co., told the group that West Sumatra field, in Rosebud County, Mont., will probably use secondary-recovery methods eventually. The field was discovered in 1951, and has produced 2.7-million bbl., mostly from the Basal Amsden sand at around 4,900 ft. There are currently 53 wells producing 3,800 b/d.

Bush indicated that water-flooding would be the secondary-recovery technique used.

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**Louisiana's State Mineral Board has no right to grant leases on land belonging to Louisiana Land Exploration Co., the company claims.** It has filed for a writ of certiorari with the U. S. Supreme Court in an attempt to stop the granting of oil and gas leases on its land.

The case was dismissed from the Fifth Circuit Court of Appeals last January on grounds that the board, as an agent of the state, cannot be sued. The company claims the board is a separate agency, set up through permission of the state, and that even if it is directly tied to the state it can be sued when it acts beyond its authority.

The high court has been asked to rule on two questions: (1) Does the Federal District Court have jurisdiction in a case between a corporation and a state agency? and (2) does the suit against the board necessarily constitute a suit against the state?

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**Delta Marine Drilling Co. has been organized for contract drilling in the Gulf of Mexico.** Controlling interest in the new corporation is owned by Delta Drilling Co., Dallas. Officers are: Joe Zeppa, president, and Chris Zeppa, Tyler, Tex., and J. M. Gardner, Dallas, vice-presidents. Alexander Shipyard, Inc., New Orleans, has been awarded a contract to convert an LST into a drilling tender and to build a submersible barge that can operate in 30 ft. of water.

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## Drilling Highlights

**West Texas**—Cities Service has staked two Ellenburger tests. The 9 Procter, slated for 13,000 ft., is in the middle of West Seminole San Andres field of Gaines County. The 1-b Nelson, 100 mi. northwest of San Antonio in Kimble County, is on a 16,743-acre block. Nearest production is Bolt field, about 15 mi. to the northwest.

**Oregon**—Riddle Gas & Oil Producers, Oregon, Ltd., a group of investors, has been issued a permit to drill in Douglas County. Location is on the Wollenberg lease, NE 28-30s-6w, 1 mi. from an earlier effort by the group, which was suspended last summer.

**Arizona**—A pair of wildcats are slated for the northeastern part of the state. One will be drilled by Franco Western Oil, a Bakersfield (Calif.) independent, and the other by Hancock Oil Co., Long Beach independent. Both are operating on acreage farmed out by Shell. Franco Western's location is in 22-41n-28e, and Hancock's is in 29-41n-27e. Both are southwest of a Humble discovery in Apache County.

**Montana**—Continental Oil has located an 8,200-ft. test to the Cambrian in the Countryman Creek area, Stillwater County, 5 mi. southwest of Columbus. The area has had no previous drilling.

**North Louisiana**—Stanolind Oil & Gas has completed an extension well in the Colquitt area of Claiborne Parish. The 1 Gladne Unit, 25-23n-6w, flowed 172 bbl. of 49-gravity oil in 21 hours through 13/64-in. choke. Production is from the Smackover "B" from 10,418-28 ft. Stanolind owns 1,500 acres in the area.

**Paramount Petroleum & Mineral Corp. Ltd., Regina, has been formed to explore for oil in southeastern Saskatchewan.** The company is headed by Art Hazle, formerly development and sales engineer for Petroleum Industry Services, Ltd.

*Friends.....*

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**The years brought growth —many more stores; a hundred fold increase in personnel—but today that spirit still is the foundation of every company policy.**

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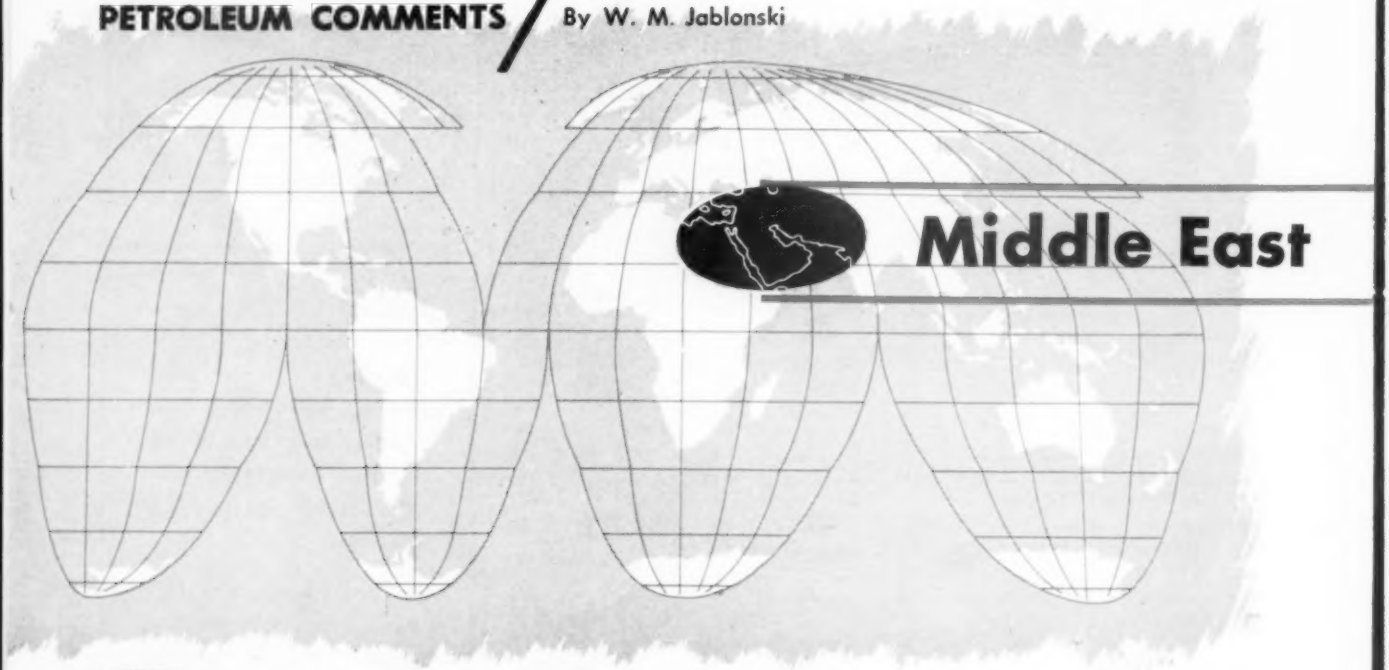


# Middle East

***Political tensions spotlight Russia's serious threat to our uneasy control of that priceless fuel—lifeblood of the Western Alliance***

**A key to control of the free world is at stake today in the politically tense Middle East.**

**The Kremlin knows this. Yet few Americans do.**

If Moscow could gain control of the fabulous oil fields around the Persian Gulf—just south of the Iron Curtain—it would, in one master stroke, control the destiny of large areas of the free world.

At the moment, we in the West have uneasy control of that oil, without realizing its almost priceless value. Most of us approach it with a casualness that is almost unbelievable.

We've neither known much nor cared much about the lands east of the Mediterranean. This lack of interest and understanding has spawned grave errors in our foreign policy, spurred anti-Western sentiment in the area, and opened the back door to increasing Communist penetration of the region.

## Strategic Importance

**Even the briefest glance at the map shows that the Middle East is far more important strategically than another Korea, or another Indochina.**

The latter are but peninsulas jutting out from the continent of Asia.

But the Middle East is a link—a crossroads—between three great continents. It is a highway to the vast subcontinent of India and beyond. It is a road to Egypt, with its vital Suez Canal, and on into Africa. It is the back door to Europe.

Every would-be world conqueror from Alexander the Great to Hitler has known its strategic importance.

Remember the desperate days during World War II, when Rommel, the Desert Fox, swept to the threshold of Cairo before being stopped? Had he overrun Egypt and Arabia, Russia might have fallen. The trucks, the planes, the guns, the millions of tons of supplies that helped save Russia all were shipped in through the Persian Gulf.

In today's air age, the Middle East is even more focal. British and American air bases there—in Cyprus, Turkey, Iraq, and Saudi Arabia—are within striking distance of key points in three continents. They are within closer bombing range of southern Russia than any other bases available to the West.

Yet the importance of the area's oil transcends even these considerations.

## More Than 'Riches'

Most Americans are aware that the Middle East is "oil-rich." But they think of this mostly in terms of "riches"—in the same sense as gold, say, or diamonds. Much, much more is at stake than the profits of a few oil companies, or the antics of a few oil-rich Sheikhs in their air-conditioned Cadillacs.

If we heard that the Middle East was "uranium-rich," we'd all sit up. Yet oil is even more vital than uranium (even the hydrogen bomb is useless without the oil to fly it there).

We live in an age of oil today. But oil has become so much a part of our routine, daily life that the word has no sex-appeal left. Like the air we breathe, we'd only become conscious of its full importance if we suddenly lost it.

Without oil, almost nothing could move on land, sea, or air: no cars, trucks, tractors, diesel trains, no ships or planes.

Without oil, we could not control the seas to hold together the far-flung fragments of the free world. Without oil we could not wage a war—much less hope to win one.

And the Middle East spells oil. For

# Oil: Key to Free World Survival

here is concentrated most of the oil of the world for our energy-hungry civilization.

## I. Big Oil

In terms of big oil, we can cross off at present the better known lands nearer to us: Turkey, Syria, Lebanon, Jordan, Israel, and Egypt. There is some oil there, yes. But so far there's no evidence of any really whopping oil pools, of world supply scale, in the states near the Mediterranean.

**The oil—the really big oil—lies in a surprisingly small area around the rim of the 600-mile-long Persian Gulf** (twice the length of Lake Michigan). It is chiefly in four parched, barren countries: Saudi Arabia, Kuwait, Iraq, and Iran.

Their oil pools are unbelievable.

Take Saudi Arabia, for instance—a flat, burning desert, three times the size of Texas, where nomad tribes still roam, as in Biblical times, in search of occasional tufts of pasture.

Startled American geologists recently uncovered a single oil field there, called Ghawar, that stretches for 140 miles—the entire length of the state of New Jersey. By far the biggest oil field ever found in the United States is the East Texas field, of nearly 6-billion barrels. There hasn't been another like it in the U.S. Yet the East Texas field could almost be lost between two wells in Ghawar!

This one field alone could mean the difference between adequate oil and disastrous shortage for the free world. It probably contains as much oil as the present proved reserves of the entire North American continent. And it's only the latest of several giants found in Saudi Arabia.

Or go next door to the Sheikhdom of Kuwait. A small sand waste at the head of the Persian Gulf, about the size of Connecticut, with a total population less than Tulsa, Kuwait was noteworthy in the past only for pearl fishing and smuggling. Now it's a fabulous piece of real estate: practically one vast oil pool with a small town on top.

A joint British-American company (BP and Gulf) first started to sniff there 20 years ago. Their first hole was dry. On their second try, they struck the famed Burghan field—800 vertical feet of net oil-producing sands. (When a U.S. producer hits 50 feet of net oil, he thinks it's pretty good.)

This one field is now rated as holding more proved reserves than all the tens of thousands of fields in the United States.

Since then, it's taken them 19 years of exploration in Kuwait to discover another hole that was dry!

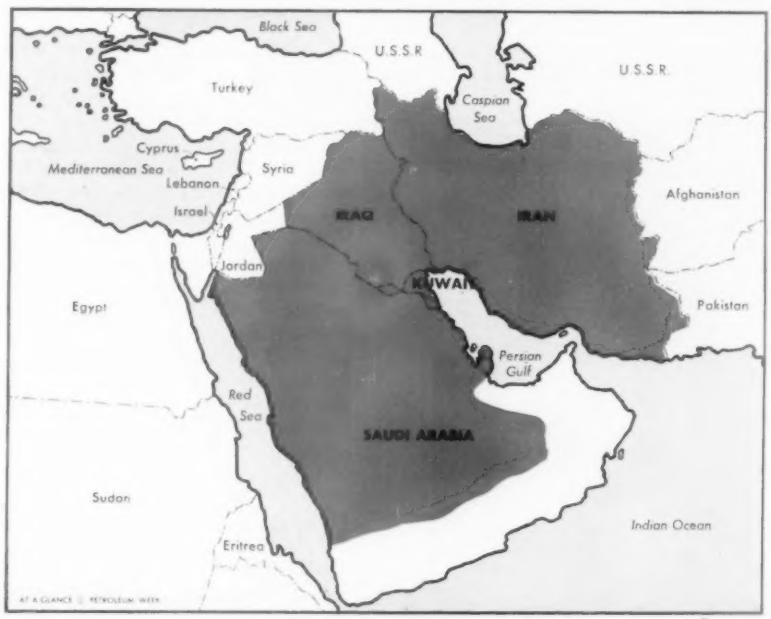
Just recently, they made another gigantic oil strike 50 miles north of Burghan. They found all the Burghan producing zones all over again, plus two new ones—with total net oil sands reported at 1,500 feet.

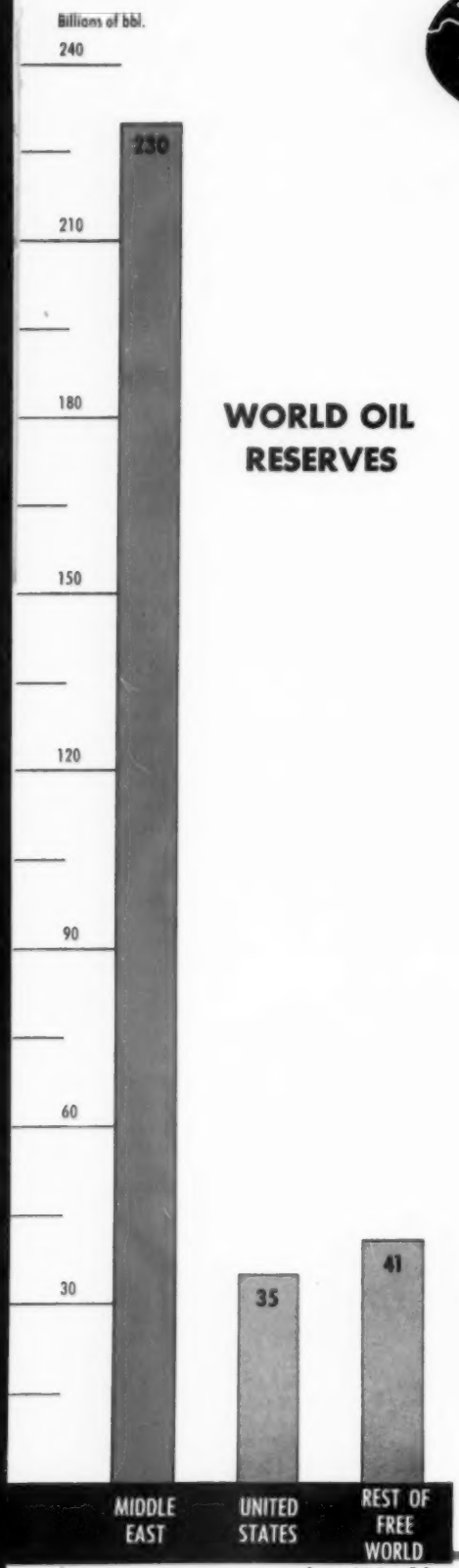
The company isn't talking—probably because it's still speechless.

This is only half the story. Mammoth oil fields also lie in neighboring Iraq (the size of California, with half its population), the famed Babylon of Biblical times and the Baghdad of the "Arabian Nights."

Just as vast are the oil pools of Iran—a bigger land, quite different, physically and culturally, from the other three. A high, barren plateau, circled by mountains in the north, west, and south, it's four times the size of California with twice its population.

The only non-Arab nation bordering the Persian Gulf, it's a highly cultured area—where even the common laborers often quote the classics by the hour. Seat of the great ancient Persian empires of Cyrus the Great and Darius, it's the home of Aryan civil-






**WORLD OIL RESERVES**

Source: Wallace E. Pratt

*There simply is no other place the soaring*

ization ("Iranian" means "Aryan") as distinct from the Semitic civilizations of the Arab lands.

## Some Fabulous Figures

**We're only beginning to find out now what truly fantastic quantities of oil lie in this whole region.**

Look at a few comparisons, and their proportions:

- At the start of World War II, proved reserves of the Middle East were listed at 6-billion barrels—one-third of the U. S. total.
- By 1952, they had shot up elevenfold to 65-billion barrels—more than twice the U. S. total (then 28-billion).
- In three years, by 1955, published proved reserves doubled again, to over 125-billion barrels—or four times the U. S. total.
- And even these listings are far short of actual discoveries. A few months ago, an eminent authority, Wallace Pratt, retired vice-president of Standard Oil Co. (N. J.), revealed in a special study for the U. S. government that proved reserves in the Middle East, conservatively estimated, totaled 230-billion barrels at the end of 1954.

**That's seven times the U. S. total** (now 30-billion barrels of crude oil, plus 5-billion of gas liquids).

**It's 75% of the free world's total** (and about 70% if you include the Soviet sphere).

**Put another way, the Persian Gulf reserves are three times as big as the proved reserves of all the rest of the free world put together.**

And the Middle East may easily hold 80% or 90% of the free world's reserves. Pratt's figures, for instance, predate the gigantic new strike in northern Kuwait. Drillers have barely scratched the surface of many of the existing oil areas there. Other vast stretches havn't even been looked at.

What does all this concentration of oil mean—to the Middle East, to the Western World, and to Russia?

# II. Mideast's Stake

To the Middle East lands, it means—literally—a rebirth. For it means not only unlimited local energy for their own use, but undreamed-of wealth, in cash—to transform their life.

Already, oil royalties are flowing today at the rate of $1-billion annually to the four chief oil producing countries (and to Syria and Lebanon, for pipeline transit rights).

This income will soar even higher in the years ahead, for these countries receive 50% of the oil-producing profits, and really big-volume production is just starting.

In addition, they get hundreds of millions of dollars annually in indirect benefits from the oil: in wages, increased trade, and so forth.

Lately, it's become fashionable in some U.S. papers to publicize the squandering of oil royalties on palaces, yachts, and trips to Monte Carlo. That's quite true in some cases. And it makes for colorful stories. But it's far from the entire picture. Even in Saudi Arabia, new schools, hospitals, roads, etc., are sprouting from the oil (though the benefits are not so widespread as they could be).

In Iraq, 70% of the oil revenues go to finance a national development program—vast irrigation projects, roads, harbors, housing, schools, and hospitals.

In Iran, a similar seven-year development program has been started with the oil money.

## A Magic Wand

Oil's impact is most dramatic in tiny Kuwait. There, oil royalties are running about $260-million a year. The total population is less than 200,000. Thus, royalties alone equal more than $1,300 annually for every man, woman, and child—not counting wages and other income.

The same per capita rate in the U.S. would amount to more than $215-billion annually—more than three times the total U.S. budget!

Kuwait is bridging milleniums in a decade.

Until recently, it was a place even the locusts tried to avoid. They could find nothing to eat there—while the Kuwaitis turned the tables and ate

them. Kuwait even had to import its water in fishing vessels.

Now, it's as if someone had waved a magic wand and said: Let there be water. Giant sea-water distillation units dominate the skyline, already providing ample water for everyone. Soon there'll be more, for irrigating the desert.

And it's as if someone waved that wand again, and there are modern harbor and airport facilities, paved roads, electric lights, schools, hospitals, and modern houses.

In fact, Kuwait today resembles one vast construction project; everywhere you look, modern, concrete buildings are either in process of going up, or old mud shacks are in process of coming down to make room for the new. You almost choke from all the dust of this activity.

All throughout the Middle East, new developments are beginning to change the face of the area.

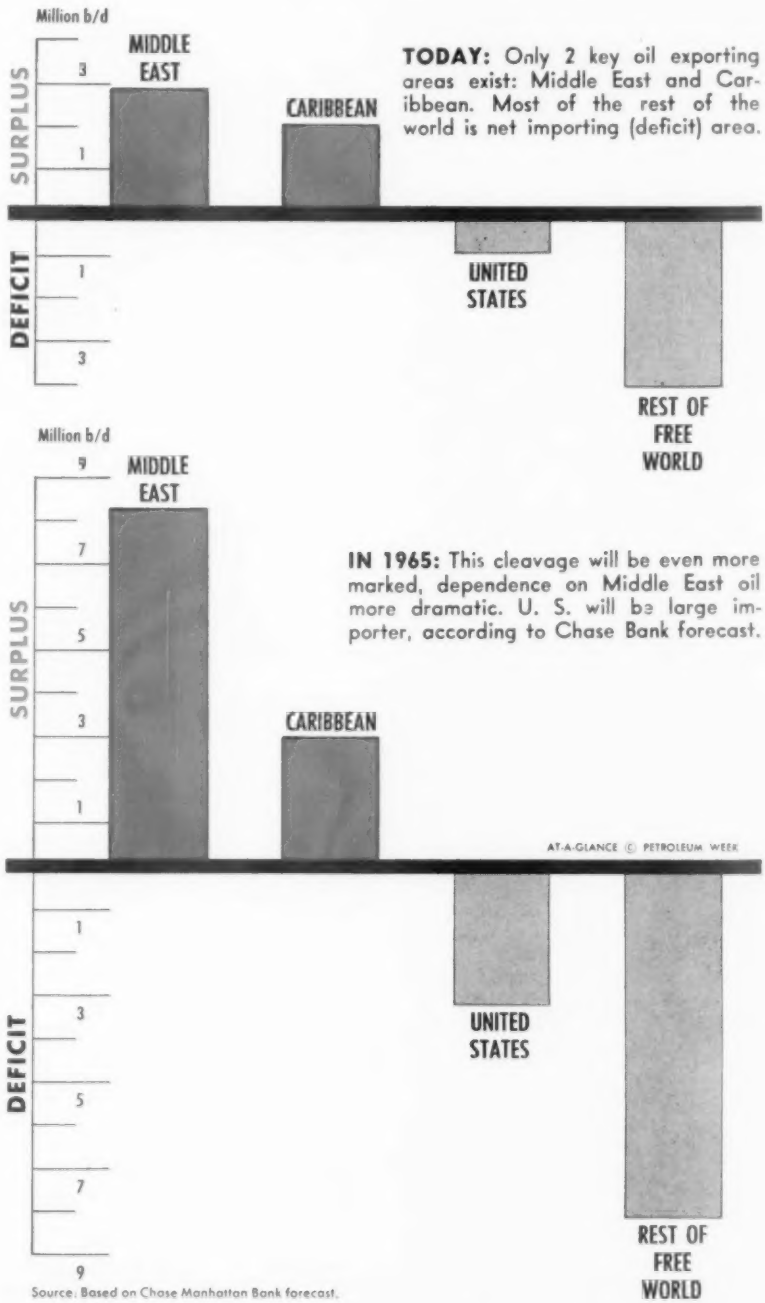
The hard, cruel land of the Old Testament is beginning to join the Twentieth Century. Modern ports and piers are bustling where dhows once beached. Airlines interlace the skies. A railroad crosses the dreaded desert of Saudi Arabia; another the high mountains of Iran. Cars and trucks are replacing the camel. Nomadic tribes, with customs older than history, are slowly changing into modern workers. Industries are beginning to develop.

Above all, the oil revenues mean water for the Middle East. And water means life. New irrigation projects—whether tapping rivers or underground sources, or distilling the sea—will literally make the deserts bloom again. Out of that soil will come new growth. Iraq, for instance, in Biblical times, supported a much larger population than today, and can do so again.

Progress in the Middle East may come swifter than we think. These are people of talent, who gave much to civilization in the past, and built great empires. During the Dark Ages, when Europe was semibarbaric, the Arabs and the Iranians were the great architects, mathematicians, physicians, and poets of the world.

Today, they are on the way to a new era. They are centuries behind us, but

## SURPLUS AND DEFICIT AREAS




Source: Based on Chase Manhattan Bank forecast.

*It's like building up the strength of a patient with*

**1955** Middle East was already the key source for major world oil movements.

they won't take centuries to catch up.

The swift jump into our rearing, contemporary civilization, however, is bound to have an unsettling emotional and mental impact on these people. The adjustments they are having to make stagger the imagination.

And with the Communists throwing matches into powder kegs all over the Middle East, we need to move with the understanding and wisdom of Solomon.

## III. West's Stake

**Luckily, all this concentration of oil in the Middle East has been discovered, and is being developed, by American and British-controlled companies** (58% of the production is American). So it's freely available to the West.

Already, Middle East production has jumped five-fold since the war to meet the surging needs of the free world. Last year alone shipments rose 20%. Daily production averaged 3.3-million barrels—half again as much as Venezuela, and nine times that of Canada.

Yet nearly three times as much oil will be needed from the Middle East in less than a decade. A recent study by the Chase Manhattan Bank concludes that the free world will have to draw some 8.5-million barrels, day in and day out, from this area by 1965. That's more than the entire production of the United States today.

These oil facts are of profound importance to every American.

**There simply is no other place the free world can get all the oil it needs now, and the vast additional quantities it will need in the future.**

Outside the Middle East, there are only two major oil producing areas in the free world: the United States and Venezuela. (Russia and its satellites are self-sufficient.)

Canada, though growing, is still small—its daily output being equal to only 60 minutes of U.S. consumption. Indonesia, a troubled and unstable land, is producing less than Canada produces.

Venezuela has little supply to spare at present. Of its record 2.2-million b/d production last year, 40% went to the United States and another 40% to other oil-thirsty Western Hemisphere areas.

Venezuela, it's true, does have good additional oil prospects. But, any extra supply that Venezuela or other South American countries can make available will be more than swallowed up by the soaring needs of this hemisphere. Latin America is already drawing on Middle East oil to meet its current needs, and its requirements will be more than twice as big by 1965.

### U. S. Can't Help Much

As for the United States, we can no longer supply the rest of the world. True, before the war we were the world's prime oil exporter, and when

**1965** World's dependence on Middle East is expected to jump nearly three-fold.

the "Allies floated to victory on a sea of oil," it was largely on our supply.

All that has changed now—more profoundly than many people realize. Though we have some standby domestic capacity, we are increasingly a net oil-importing nation. Last year, one out of every seven barrels we consumed was imported (with 4% of total consumption coming from the Middle East).

Our needs are climbing at a powerful rate. Consumption has jumped over 70% since 1946. (Last year's increase alone in our demand amounted to almost twice as much oil as Canada's total production.)

The Chase Bank study indicates our needs will jump another 50% just in the next decade. If they do, we'll be consuming close to 13-million b/d by 1965—almost as much as the whole free world today.

Our domestic production will be hard put to match that rate of gain, even with maximum drilling (and we should do everything possible to maximize exploration for domestic reserves —our first line of defense).

## It's Crucial to Our Allies

**But even if the United States—as an isolated unit—could get along without Middle East oil, our Allies and the rest of the free world definitely could not. That oil is crucial to them.**

**And, therefore, it is crucial to us.**

For we are not an isolated unit. We've learned that.

That's why a big part of our $250-billion of military expenditures over the past seven years has gone to build up the 14-nation North Atlantic Treaty Organization, and into commitments in the Far East.

That's why we've also poured additional billions of dollars into other foreign aid.

**What earthly good would it do us to build up the economic and military strength of this Western alliance if we ignore the security of its Middle East oil supply—the very lifeblood of that economic and military strength?**

It would make as much sense as to build up the strength of a patient with vitamin injections—and then not to care if his jugular vein got cut.

One of our Congressmen recently announced that the U. S. "ought to forget about Middle East oil," that if we lost it, we could get along very well "without a quart" of it. He forgot to mention, however, that in that case we'd probably have to get along without our Allies as well.

## Europe's Jugular Vein

Take Western Europe, for example.

**Just about everything that moves in Europe moves on oil. And Europe has to import over 95% of its oil, mostly from the Middle East.**

Since the war, its oil needs—for industrial power, transportation, and

military use—have nearly quadrupled.

Today, the steady stream of tankers delivering nearly 2-million barrels of Middle East oil each day, day in and day out, to Europe is a veritable artery, essential for life itself.

And these requirements will continue to rise by leaps and bounds—twice the rate of ours—as Europe turns from the coal it has depended on ever since the industrial revolution began over 150 years ago.

Europe's coal mines are wearing thin at the seams. Industrial plants are turning to oil in droves. Trains are being dieselized. Britain is even converting electric power plants to oil.

Oil needs will keep going up even after atomic energy can start making a substantial contribution—and that won't be for another 15 or 20 years.

(Recent studies indicate that world energy requirements are rising so rapidly that even if a third of all energy comes from atomic sources by the year 2,000, oil requirements will still be four times larger than today.)

The oil needs of the rest of the Eastern Hemisphere are also soaring—in Australia, India, Pakistan, Japan, and Africa.

The consumption of many of these lands is not large today. But all are regions of accelerating growth, many industrializing rapidly.

All depend on Middle East oil.

And this is just for ordinary peacetime needs.

## If War Comes

In case of another global war, think of the vast oil needs of our far-flung operations, and those of our allies. During the last year, oil accounted for 60% of all the tonnage shipped overseas.

(Even though our Navy is thinking in terms of nuclear-powered vessels, it will take an estimated 20 years to make the switch. Even then, they'll need plenty of oil for carrier-based planes, landing craft, and other uses.)

With severe rationing, the United States probably could supply its own basic military needs. But it could not supply all the vast requirements overseas, much less to all the various points through submarine-invested seas.

Without Middle East oil, how could we supply not only the military needs of the Allied Forces, but also the vast quantities of oil needed to keep essential factories and transportation facilities running in coal-short allied countries?

As Rear Admiral Ernest M. Eller (USN ret.), former Commander of our Middle East Force, warned recently:

**"It is a stark fact every American should know that the United States and its Allies would be crippled, if not brought to disaster, if we lost the Middle East oil and control of the sea that makes it possible for us to use it."**

Even now, in this uneasy peace, we need Middle East oil for our troops and planes in NATO, for our air bases in North Africa, and for our fleet in the Mediterranean and the Far East.

# IV. Russia's Stake

Is it any wonder, then, that Kremlin agents are busy intriguing in Egypt, in Cyprus, in Syria, in Iran, in the Persian Gulf?

Russia long has coveted the Middle East. And the Communists have been quick to see the meaning of the new power of its concentration of oil as power to dominate the world.

In the famous 1939 Soviet-Nazi pact, Russia demanded recognition of "the area . . . in the general direction of the Persian Gulf . . . as the center of aspirations of the Soviet Union."

Until recently, it tried to achieve its goal through Iran. Remember how, at the end of World War II, the Russians refused to withdraw their troops from Iran? How they set up a puppet Communist regime in the northwestern end of the country? Only a courageous stand by Iran, backed by the U.S. through the United Nations, finally dislodged them.

Yet five years later the Russians were back—this time undercover. An underground network of Communist agents worked effectively with nationalist extremists in ousting the British from the Iranian oil fields in 1951.

By 1953, in the last troubled days of Mossadegh, Communists had already infiltrated so deeply into Army and key Government posts in Iran that intelligence reports indicated that a Communist take-over of that strategic country was only a matter of weeks. This would have brought Moscow's domination right down to the Persian Gulf.

Luckily, the fall of Mossadegh, restoration of the popular Shah, and reopening of Iran's oil flow by an international consortium foiled that move. Iran now has even joined the Baghdad Pact.

So now the Communists have vaulted over the northern tier, and are approaching their objective for the first time through the south—the Arab lands—with offers of "aid" to Egypt, Syria, Yemen, and practically anyone who'll take it.

Why are they now supplying arms to Egypt? Clearly to spur outbreak of open war with Israel in the hope this might force the West into action that would really inflame the Arab world against us.

The Soviet objective is as obvious as the smile on Bulganin's face: to use Arab nationalism—of every form and type from Egypt to the Persian Gulf—to bring down the Western alliance the easy way—through its vital oil artery.

If the Communists could simply deny us that oil, they'd have half won the cold war.

And if they could get control of it, they would have the economic and military strength of the free world by the throat.

They might supply that desperately needed fuel to Germany, or France, or England, or Turkey—but on the Kremlin's terms. And which way would India turn, or industrialized Japan, if the Communists controlled their oil?

With Persian Gulf fuel, the Soviet fleet and submarines could easily operate in the Indian Ocean and the Pacific, as well as the Mediterranean. Their tanks and armies could roll from Asia Minor in three directions. Their own logistic problems in fuel would be solved.

In short, if the Communists could gain control of the Persian Gulf they would have taken a long step toward world domination.

Any way you look at it, America's stake in the Middle East is tremendous.


**Reprints Available**

Reprints of this report are now being prepared and will be available early in June. Single copies will be sent to PETROLEUM WEEK subscribers on request without charge. Additional copies will be available at 25¢ each. On orders for 11 or more, quantity prices will be quoted on request. Address orders to:

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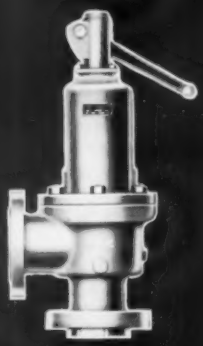
1943

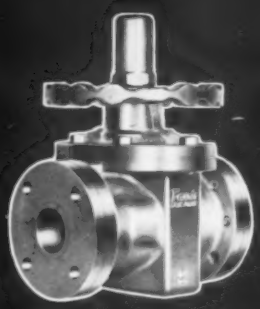
1944

# "Progress."

1945

Safety-Relief Valves
Balanseal Bellows Valves
Farris Engineering Corp.

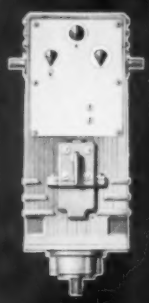




Pinch Type Flexible
Diaphragm Disc and
SuperSeal Valves
Farris Flexible Valve Corp.

1951

Mechanical and
Hydraulic Governors
Farris Pickering
Governor Co., Inc.



U. S. Patents and Patents Pending

1955

# ... through honest purpose"

The larger and more experienced a manufacturer becomes, the more he appreciates that PROGRESS is not restricted to simply producing fine products at fair prices. Rather, it is the sum total of all the services he renders to his customers day by day and year by year. It is unceasing vigilance to assure customer satisfaction . . . it is constant concern for improvement—for *better* products at even *better* prices . . . it is strict adherence to a commercial code of honor, like Farris' policy of "Progress—Through Honest Purpose".

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THE WORLD'S LARGEST INDEPENDENT OILFIELD SUPPLY AND SERVICE ORGANIZATION

***How Atlantic's President Supplee Sees 'Organization' . . .***

**1. Define your goals**

**2. Tailor company structure**

**3. Coordinate operations**

**4. Fix responsibilities**

**5. Fit men to jobs**

**6. Boost field authority**

# Getting the Maximum from Men and Jobs

**What men in a company should make what decisions? That's a question that's getting bigger and bigger for both independents and majors who are faced with growing competition and complexity in their operations. For Atlantic Refining's president, Henderson Supplee, Jr., the answer lies in finding the "right" organization.**

This spring and summer, Atlantic will continue to place in effect some of the management-decentralization moves that grew out of studies started some years ago. This week, Supplee released to PETROLEUM WEEK details of the thinking behind the company's whole reorganization program.

**Core of Atlantic's approach has been a redefining of responsibilities, with the company now firmly committed to straight-line authority—and to more decision-making in the field.** As Supplee says, "We had too much concentration of authority at top-level management. We needed to place more responsibility in the hands of field managers."

**Atlantic's reorganization principles apply to any oil company of any size** that faces the problems of growth and change. These principles call for:

- Pinning down the company goals.
- Deciding on the company structure that will best reach those goals.
- Fitting managerial manpower to the structure.

When Supplee became Atlantic's president, in 1952, much of the groundwork had been laid by management and by a special group in the industrial relations department—Organization & Policy. As head of domestic marketing, Supplee himself had taken part in this.

He feels that reorganization in any company can be helped greatly by the special work of a staff group. And he doesn't worry about "ivory tower" planning.

His view: "Our staff group doesn't get much chance to lose its objectivity. If they start with any preconceived idea of organization they want to impose, the practicality of a department's needs knocks it out."

**Atlantic's organization planning started with a one-page sheet of company objectives.** This listed the various operations by which the company seeks "a reasonable profit." And it fixed such targets as a fair return to stockholders, customer confidence, fair treatment of employees, and the meeting of civic obligations.

**Working out the second plank in the program—the company structure that would best meet the objectives—forced a basic decision on flow lines of authority.** "In the beginning," Supplee says, "the principal point we had to decide was whether to organize with

***". . . it is impossible to make any form of organization work well without having people perform well . . ."***

**ORGANIZATION starts on p. 29**

a straight-line form of management. We could have followed the example of Jersey Standard—which has its management activities concentrated in committees.

"The Jersey company is large enough to justify having men with operating experience given full policy responsibility—but with their operations responsibility delegated to somebody else.

"But in a company of our size—much less spread out and with less diversification—the sensible form is the straight line. This means that with each department there is a general manager who is directly responsible, not only for policy, but for day-to-day operations, too. These men are responsible to me, and through me to the board.

Atlantic reaffirmed the distinction between operating departments (such as crude production, manufacturing, marketing, and transportation) and staff departments (such as finance, legal, and public relations).

The company clarified the obligation of operating departments to seek, rather than duplicate, the services of staff men. But it made clear the authority of operating men to accept, modify, or reject staff advice—subject to appeal.

**Atlantic also recognized that straight-line authority in a large company can result in a harmful isolation of departments,** although this would not be true in smaller companies with closer interemployee communications.

**So the company set up three layers of coordinating committees.** There is a group of "primary" committees, composed of men down the line in different departments.

There is a single committee of operating managers at the first level under department heads.

And there is a top committee of operating general managers, who advise the president.

**"We next wrote out the responsibilities of our people," says Supplee.** "This included the duties of the president and the directors." For example, the president was assigned 14 basic responsibilities, from recommending budgets to representing the company in public contracts. Also spelled out were the functions each department was to perform, plus the roles of managerial personnel.

**The biggest part of the job was matching men to the paper organization. "This," says Supplee, "called for intensive effort to find out what talent we had and to place it properly in the organization.** Because there is rarely a perfect solution to this problem, we have to train our talent to do the jobs that are needed. Or, if necessary, we fill in gaps with people from the outside."

At Atlantic, training is done by the departments themselves, although it is coordinated by the industrial relations department.

Supplee stresses, "It is impossible to make any form of organization work well without having people perform well. The best organization will fall down."

**The accent on decentralization has greatly improved Atlantic's ability to handle new situations.** Supplee observes, "There is no substitute for the knowledge of a field man on the spot. It stands to reason that a local manager will know more of changing conditions, chances for sales improvement, and problems of customers, than we could supply from headquarters in Philadelphia.

"The principal reason for our decentralization is that we are an expanding organization, not necessarily geographically in marketing, but definitely in production. Our program reaches down to district managers and their section managers in producing, and to the district level in marketing.

"Our objective is to encourage the development of men who think for themselves, and at the same time use team procedures. We do not practice the imposition of edicts on managers in the field."

Supplee admits the system is "an expensive form of managerial administration, since it may require large numbers of people." But he feels "it will more than pay its way, because of the speedup in local decisions and the development of informed recommendations on future programs."

**Supplee says the inevitable skepticism toward such changes can be met through careful explanations to personnel. Atlantic ran into some doubts on decentralization from the production department.** "There had been a quite close concentration of managerial responsibility at the top in producing," Supplee recalls. "This was because of the need for great skill in the special fields of geology and petroleum engineering.

"We realized it would be difficult for that small, closely knit group to cope with all the local problems that would arise in the field, because of the wide geographical distribution of exploration and drilling.

"But there was concern whether we had the skill in the field to handle the difficult problems that would arise. When you are faced with a decision about a well for $500,000, a mistake in interpretation of data is costly. There was real doubt whether the decentralization in other departments would be appropriate in producing."

The company overcame this problem by showing how it would be solved by the "manpower tailoring" job.

**Says Supplee, "once it was clear that the growth of the company required development of management skills in the field, we got full cooperation from the whole management group in producing."** And he strongly emphasizes: "There should be no accepted studies until the departments themselves have participated and have agreed with the results."

Atlantic also took great care in reorganizing its marketing. "Because of the numerous changes we needed to make," says Supplee, "we gathered all district managers and section heads in Atlantic City. Instead of having Organization & Policy, or top management, tell about the changes, we had the district people themselves take part in demonstrations.

"For example, there were large organization charts, with little doors. A man would put his head through the door and explain his position on the chart. He would tell what he had done, and what he would do under the new setup. We gave each man one of the organization manuals. We conveyed to everyone exactly what significance the changes would have."

**Supplee adds, "You have to be coping constantly with the need for change. We do not think the form of an organization, once selected, has to be frozen and accepted without question.** On the contrary, after we have once made what we hope is the best decision on organization, we then want to watch it under practice.

"Trying to be consistent creates problems of its own. We have already found the need to go back to redefine departments.

"However, we don't want changes to be made casually. We treat our organization manual as a formal document that will be adhered to, unless revised."

How have Atlantic's managers reacted to the reorganization and loosening of centralized control? Concludes Supplee, "None of our people would want to turn back."

# Training Managers to Train

**Shell Oil Co. of Canada is showing the good that comes from a refusal to stand pat on training methods. In overhauling supervisor devlopment at its Montreal refinery, Shell dropped its line managers into the middle of the classroom. Result: better supervisors—and better managers.**

The story of Shell's dissatisfaction with the old system, and what was done about it, was told last week at the API Refining Division meeting in Montreal. Although the report by Shell's S. D. Rees and G. Davidson covers work done at the Montreal plant only, the company's thinking opens the door wider to a training concept that can be applied to any phase of operation in any company: direct participation by line managers in formal supervisor training.

A second principle underscored by Shell's program is the organization of supervisor training along lines of common job interests.

**From 1951 until last year, the Montreal refinery had a well-run supervisor training program that was getting good results.** A training supervisor organized the instruction. His planning was discussed and approved by department managers, who served on an Educational Training Committee. All supervisors were divided into training groups of 12 to 15 men, which met once every four weeks. Each group had men from all levels of supervision below that of manager.

Advantages: By mixing supervisory levels, this earlier system gave good communications up and down the line. It was a fairly quick way of training a large number of supervisors.

**But time turned up some limitations. These were chiefly a trend toward "repetitive, stereotype discussions," and the unsatisfactory "rubber stamping" role played by managers.** The mixing of supervisory levels was impeding discussion of specific job problems, since one level of of supervisors was unfamiliar with the problems of others.

Shell also found that department managers got only the limited benefit of running through the conference program to give their approval.

**So early last year, the training program was revamped. First, the supervisors were regrouped, to bring together men with similar work problems.** Five separate training groups were set up, composed of assistant department managers, technical personnel, nontechnical supervisors, maintenance supervisors, and process supervisors. This breakdown allowed the tailoring of training sessions to specific needs of different levels.

**Second, a department manager was assigned to each group as chairman. His jobs were to pinpoint his group's training needs, to work with the training supervisor to meet them, and personally to lead each session.** Named chairmen were the refinery manager, the chief technologist, treasury manager, chief engineer, and chemical plant superintendent.

Shell's Davidson and Rees say that getting the participation of each manager was not easy. They explain, "What we had to put across was that formal supervisory training is just as much a line responsibility as is on-the-job training."

Factors favoring the new approach:

- Department managers best know what training supervisors need.
- Managers can keep the program down to earth.
- Such demonstrated interest by the "boss" is very helpful in putting training to work on the job.
- The support of managers themselves is more whole-hearted when they know the program is theirs—and "not something dreamed up by the training man in his ivory tower."

Under the new system, the managers' Educational Training Committee is retained as a coordinating group. And the staff training supervisor still has the important function of advising managers on the best techniques for reaching the goals they set.

**The Shell men at Montreal take the stand that "effective training, in the long run, must save the time of management."** And lack of managerial time is one of the pitfalls Shell warns against. So far, managers have found the time.

Another danger is that the manager will dominate conferences. A third is the tendency of technical managers to stress technical training at the expense of training in human relations.

But Shell says none of these problems is too difficult if recognized in time, and if managers control their own attitudes.

Shell isn't sorry that it started the program by mixing all supervisory levels and departments. Davidson and Rees conclude: "Without this, we could not have moved so smoothly into direct managerial participation."

# What's New / IN MANAGEMENT

**There's a growing awareness that there are two important "publics" that don't know enough about oil operations—women and oil employees. And the Desk & Derrick Club of New York City is aiming at both birds with one stone.**

This week 150 members of the club, who work for oil companies in New York, are completing an eight-week term of study on "How Business Operates." The women each paid $3 for weekly evening classes, held in cooperation with New York Community College. It is the first course organized by Desk & Derrick clubs in the country.

Lecturers are oil men and college professors. Subject matter includes the function of refining, oil marketing, sales promotion and advertising, oil accounting, and human relations.

•

**How local oil men can help the cause of aid to education is being shown by API's Southwest Louisiana Chapter.** It is coming out with a booklet listing college scholarships available from 12 major oil companies, from 12 Southern universities, and from the National Merit Scholarship Program.

The booklet prepared by George Herbert, public relations chairman of the chapter, stresses scholarships that aid students in courses which might lead them into the oil business.

Next year the chapter hopes to distribute to high school students a much more complete scholarship list.

•

**Five oil companies have been publicly cited for public service in preventing accidents in 1955.** Among the winners of the National Safety Council's Public Interest Award are American Oil and its parent, Indiana Standard; and three Jersey Standard affiliates—Esso Standard, Humble, and Imperial Oil, Ltd. A sixth award went to Ethyl Corp.

The companies contributed time and space last year in many advertising media.

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*lubricated plug valve leadership*

GRAVITY METER CREWS double their production in Australia as bulldozers' . . .

# Trail Blazing Pays Off

**What started as an experiment in using bulldozers to help increase the production of gravity-meter crews is now paying off for a Caltex affiliate. A year after its launching, it has: doubled crew production; halved the costs per station, in time and money; and added several thousand square miles to coverage originally planned—at no added cost.**

All of this is happening in Australia, where West Australian Petroleum Pty., Ltd. (Wapet), is engaged in a vast exploratory program (PW—Nov.18 '55,p28). Its concession covers 225,000 sq. mi. of coastal and northern portions of Western Australia.

The company is owned 80% by a Caltex subsidiary, 20% by Australia's Ampol Exploration, Ltd.

**The engineering experiment involved using some eight or nine bulldozers to clear 2,200 mi. of access trails to speed the work of geophysical crews.** The trails opened up 9,500 sq. mi. in Wapet's Kimberley area operations.

The scene of the unusual project is one of two areas in which Wapet is currently concentrating its major exploratory effort. It's a peninsula in the far northwest, between the small ports of Broome and Derby, a desolate region known vaguely as Dampier Land. It is virtually uninhabited wasteland, covered by dense vegetation known as Pindan Scrub, which makes it out of bounds for conventional transport.

**As a result of the additional thousands of miles of trails, Wapet figures gravity survey mileage has been increased locally by 150% and more.** Costs per gravity-meter station have been cut 50%, despite the fact that the bulldozing operation cost several thousand dollars monthly.

The cost, borne by Wapet, is in addition to the crew operations. These include four gravity crews supplied by Robert H. Ray Co., of Houston, and a seismic crew furnished by Geophysical Service, Inc., of Dallas.

**Wapet thinks morale improvement is another important achievement** of the program.

The access trails relieve the crews of the sheer labor of scrub-bashing every foot of their progress, and eliminate fatigue as a serious factor affecting production and accuracy.

**A further advantage is the resultant increase in crew efficiency.** The surveyors who fix the gravity-meter stations now get a long and unobstructed range of vision for their theodolite shots, in place of the usual highly restricted visibility of the uncleared Australian scrub country. This means considerably fewer survey observations, fewer errors, and correspondingly fewer reruns.

**The use of bulldozers to clear trails had been under consideration for some time but had been originally ruled out on economic grounds.**

Wapet calculated it would need at least a 100% increase in gravity-meter production to justify the added costs. In addition, crews to man the machines were hard to find for country where searing summer heat makes even minimum effort an ordeal.

Gravity-meter work was started in Dampier Land in the autumn of 1954. But at that time the crews, equipped with four-wheel-drive vehicles, pushed their own way through the dense vegetation. Often they had to hack a path through the virgin scrub with machetes.

The deterioration of vehicles was very high, and the splintering scrub took a fierce toll of tires.

The volume of work actually completed under these circumstances was extremely small. The rainy season of late 1954-55 made normal surface movements even more difficult. Field operations were suspended in the Kimberley area, and the field parties transferred to the south.

**The trail-clearing program was launched experimentally on a modest scale last spring, with two bulldozers serving two gravity-meter crews,** as well as a seismic party that used the same trails. A third unit was added later.

By the beginning of summer, the bulldozers had cleared 200 mi. of trails, and production of the gravity-meter crews had already been doubled.

**Encouraged by the initial results, Wapet extended the engineering operation. Its revised program called for the near-impossible; the construction of more than 1,800 mi. of access trails in less than nine weeks.**

The problem was aggravated by lack of water and fuel. And other supplies also had to be hauled great distances.

Bringing in the additional bulldozers was a major undertaking. They had to be brought from Perth, 1,400 mi. to the south. Most of the trip was over a road that is scarcely more than bush track, and some of the machines bogged down in sands enroute.

A race against time and elements got into full swing once all units were on the spot, with sweltering sun and moonlight providing the lighting facilities.

But the race against the monsoon season of 1955-56 was won. And the results, according to Wapet, seem well worth the effort.

# Venezuelan Roundup

## Creole Refinery to Be World's Second Biggest

**Creole Petroleum Corp. expects to boost the capacity of its Amuay refinery to a whopping 500,000 b/d by 1960**—the biggest refinery in the world next to Abadan, Iran. (Abadan is rated at 550,000 b/d, but is operating at only half capacity.)

Duane Davis, Creole refinery administrator, said exports of crude from Amuay will be halted when the expansion program is completed. Details of plans for the additional capacity have not been released.

Crude runs to the Amuay plant averaged 158,000 b/d in 1955. An 11,000-bbl. fluid-catalyst Hydroformer went on stream last year, and construction was begun on a third crude distillation unit with a design capacity of 70,000 b/d.

The refinery went into operation in 1950 with 60,000 b/d initial capacity.

Two 140-mi. pipelines with a combined capacity of 510,000 b/d bring crude to Amuay from the eastern shore of Lake Maracaibo.

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## Seeks 'Diverse' Capital

**Venezuela wants capital of "diverse origins" to spread foreign investments in its oil industry, although the government finds no fault with companies already in business here.** This is about the only signpost that has emerged recently as oil groups await some word on their prospects for new oil concessions.

Minister of Mines & Hydrocarbons Dr. Edmundo Luongo Cabello made the statement recently that the government is studying the bids for new concessions with a view to attracting capital of "diverse origins." He indicated that this policy may lead to a share in the oil industry for independent producers as well as European companies.

But the minister hastened to add that "this does not mean we are dissatisfied with the sources of capital presently invested in the development of Venezuela petroleum." And he reiterated earlier statements that offers will be considered on a competitive basis in order to avoid criticism.

Dr. Luongo Cabello revealed that "numerous" bids have been submitted by independents "and other sectors of the world petroleum industry." He declined to set a date for an announcement on new concessions, but his comments were regarded by some observers as an indication that action may come soon.

The government, meanwhile, has gathered support for its petroleum policy from the influential Venezuelan Federation of Chambers of Commerce & Industry. The group backed the granting of new concessions in resolutions adopted at its annual convention.

It is clear at this point that the government intends to grant concessions with a view to increasing production of light crudes in eastern Venezuela. Oil men in the country are confident that important new discoveries can be made there.

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## Creole Plans Terminal

**Creole Petroleum Corp. will build an island in Lake Maracaibo as a terminal for ocean-going tankers.**

The $15-million project is scheduled for completion in mid-1957. Facilities on the 135-acre island, offshore from La Salina, will include two docks and tank storage capacity for 3.1-million bbl. of oil.

The lake will be open to navigation by deep-water tankers within a few months, as soon as dredging is completed on a 36-ft. channel through the bar at the outlet to the Caribbean.

Pipelines and electric cables are being cleared from the lake bottom in preparation for actual construction.

The island will be created by pumping 6½-million cu. yd. of silt into an area enclosed by pilings and slabs of concrete. These will be cast in Creole's La Salina casting yard.

Contractors on the project are Raymond Concrete Pile Co. of Venezuela, Brown & Root, and Gahagan Overseas Construction Co., which will do the dredging. Sucre & Barret C. A. is carrying out tests of the lake bottom to depths up to 100 ft.

The project was designed by Dr. Jose Sanabria. When finished, it will form an island approximately 3,000 ft. long and 2,000 ft. wide. Two concrete docks, each 1,150 ft. long and 79 ft. wide, are designed to handle tankers up to 60,000 tons.

The storage units will consist of four steel tanks of 286,000 bbl. capacity each, and two reinforced concrete tanks holding 1-million bbl. apiece. The storage capacity can be doubled in the future.

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## Output Dips from Peak

**Crude oil production in April dipped from its record-breaking peak** of 2,391,984 b/d in March. The month's average was 2,313,745 b/d, according to the Ministry of Mines & Hydrocarbons. Most of the drop was due to a cut in Creole's output.

Production by companies (in b/d): Creole 994,666; Shell 681,416; Mene Grande 343,054; Socony 96,392; Mercedes 23,614; Richmond 61,633; Texas 44,953; Sinclair 30,489; Atlantic 19,928; Phillips 9,953; Pantepec 5,272; Talon 2,189; Caracas 186.

## Aluminum Pipe Heads for Venezuela

**The first export shipment of Reynolds seamless aluminum pipe is now headed for National Supply Co.'s warehouses in Venezuela's major oil areas. The carload of 2-in., 3-in., and 4-in. pipe is grooved at the ends for quick coupling. Reynolds says three men recently laid a mile of this pipe (above) in 1½ hours.**

# Three States Join on Tapline Bid

**Lebanon, Syria, and Jordan last week reached agreement in principle on division of the 50% of pipeline profits offered by Trans-Arabian Pipe Line Co. to these three and Saudi Arabia** (PW—May11'56,p48).

Lebanon's Minister of State, who was authorized to act as spokesman for the three countries, is expected to visit Saudi Arabia in the near future.

The communique issued in Beirut did not specify whether the three countries had mutually agreed on an equal split, or on a mileage basis for computing each country's share of the 50% offer. Nearly three-quarters of Tapline's mileage lies in Saudi Arabia.

Tapline presented the proposal as it announced plans to expand its present 320,000 b/d capacity to 410,000 b/d by January, 1958.

Under its present agreements, Tapline is exempt from paying transit fees to Saudi Arabia until 1964. The other three countries receive roughly $1¼-million each per year, in transit fees and other payments.

**If the profit-splitting principle is accepted, Tapline will have to change its basis of operations from a service to a profit-making corporation.**

Under the new proposal, Tapline would charge a tariff of 49¢ per bbl., based on the difference between published crude prices at Qaisumah, Saudi Arabia, and Sidon, Lebanon. Prices at Qaisumah, Tapline's eastern terminus, are practically the same as Persian Gulf prices.

The money "earned" in the four countries could then be computed, and payments made in the form of income taxes to those countries. An allowance would be assumed for normal depreciation, amortization, and operating cost.

**An estimated profit share of $16-million would be available** to the four countries on the basis of present volume, or $4-million each if divided on an equal basis.

When Tapline's throughput increases two years hence, the 50% pot would go up to roughly $25-million.

**In its proposal, made separately to each country, Tapline takes no position on how the profit should be divided** among the four countries. Any basis that is mutually agreeable to all four countries is agreeable to Tapline, whether involving a four-way split, or a mileage-ton basis.

**If the proposal is accepted by the four Arab states, the two criticisms leveled most often at the pipeline company would be met:** (1) A 50-50 profit principle would be in effect; and (2) the company would pay income tax, from which it is exempt under the present charter.

**The problem to be thrashed out is familiar: What is the best way to divide pipeline profits when there are wide differences in mileage and company investment in the countries involved?**

Faced with the same problem, Iraq Petroleum Co. late last year took the bull by the horns and negotiated a unilateral agreement with Syria on a mile-ton, 50-50 basis. There are 263 mi. of IPC pipeline in Syria plus pumping stations. But Lebanon, with only 20 mi. of the IPC line, has refused to agree to the mileage principle.

As an immediate effect, the Tapline proposal probably destroys chances for an IPC-Lebanon agreement before the four Arab countries get together on how to divide the Tapline pool.

**Saudi Arabia, already drawing rich royalties from Aramco production, holds the ace card,** with 538.9 mi. of Tapline pipe and four pumping stations, plus the projected auxiliary units. Jordan accounts for 110.3 mi., Syria 79.1, and Lebanon 25.8.

**If the mileage principle holds—though some close observers say that Saudi Arabia will not insist on it—Lebanon would be forced into an agreement with IPC on this basis.** Otherwise it might be faced with an IPC move to take its pipeline out of Lebanon entirely, and to ship only through Banias, Syria, already IPC's main terminal. Also at stake is the possible new terminal point for diversion of IPC's unused Kirkuk-Haifa line.

**But if the four countries settle on an equal four-way split, IPC might be put in an embarrassing position by Lebanon's bigger take.**

IPC is faced with the disadvantage of depending completely on Mediterranean outlets for its main northern fields. (It has outlets to the Persian Gulf only for its smaller Basrah production.) Tapline, on the other hand, carries only a third of Aramco's crude production, most of which lies at the Persian Gulf, and can easily move by tanker.

# Saudis Repeat Buraimi Offer

**The Saudi Arabian government last week officially indicated it is willing to grant oil rights in the disputed Buraimi Oasis to the British-registered Iraq Petroleum Co. group,** if the British in turn recognize Saudi Arabian sovereignty over the area.

The Saudi Arabian spokesman who made this disclosure in Cairo also said the wholly American-owned Arabian-American Oil Co. would go along with the Saudi government's attitude toward the British oil company.

This, however, could not be confirmed in Aramco's New York offices this week.

**The Saudi spokesman is Abdur Rahman Azzam,** former secretary-general of the Arab league and now international attorney for the Saudi government. Azzam returned to Cairo from Jeddah, Saudi Arabia, where he had preliminary talks with the British parliamentary undersecretary for foreign affairs, Dodds Parker, on resumption of direct negotiations to settle the Buraimi dispute.

"The Buraimi dispute is a question of sovereignty; it is not a battle over oil," Azzam said in Cairo.

The spokesman confirmed earlier Saudi assurances, made unofficially to Britain, that British oil interests would not be excluded from the Buraimi area if Saudi sovereignty there is recognized (PW—Feb.17'56,p38).

"Theoretically," Azzam said, "the Buraimi area would fall within the Aramco concession if it is recognized as Saudi territory.

"But," he added, "Aramco has officially assured us that they are more interested in peace than in having more territory for exploration. I am sure it will be possible to accommodate the British companies in that area."

**Azzam made this statement in Cairo as the Saudi attitude toward the Buraimi dispute became more conciliatory.** Saudi officials again talked of "the traditional friendship between Britain and Saudi Arabia."

**Saudi Arabia, Azzam said, is now waiting for the British to say when and where they want to start direct negotiations** to settle the dispute over the tiny oasis in the southeastern part of the Arabian peninsula.

Azzam, who is an Egyptian, said the Saudis favor New York as the place to hold the Saudi-British talks. The good offices of the U. S., he said, had been "very useful" in getting the disputing sides together and starting off preliminary talks.

# What's New / AROUND THE WORLD

## BP Expands Sharply

**UNITED KINGDOM—British Petroleum Co. jumped its crude oil production 25% last year to a new high** of 920,000 b/d, according to the company's annual report, released last week. The increase was due mainly to larger output in Iran and Kuwait.

Sales of crude oil and refined products also hit an all-time high of 960,000 b/d, 15% above 1954. Of the total 120,000 b/d increase, some 80,000 b/d were refined products.

Refining throughput jumped 23% over the previous year, to an average of 590,000 b/d. This was largely due to the first full year's operation of the Aden refinery in the south Arabian peninsula, and the first operating year of Kwinana in Australia.

The company's present tanker fleet consists of 144 vessels totaling 2-million deadweight tons. It also has 2½-million tons of charter.

In addition BP now has a $224-million tanker construction program in hand, the largest in its history. This will add 41 vessels totaling 1¼-million tons to its fleet. The tankers range in size from small 14,000-ton vessels up to 42,000 tons.

As the company reported earlier, its consolidated net profit for 1955 catapulted 160% to a total of $126.9-million, from $48.8-million in 1954.

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## Panama Plans Jell

**CANAL ZONE—Foster Wheeler Corp. may build one of the two 55,000 b/d refineries slated for the Colon area by two separate U. S. groups** (PW—May18'56,p24).

This was revealed in Panama last week by John M. Shaheen, of New York, president of the newly formed Panama Refining & Petrochemical Co. Plans for the other plant, to be built by Panama Refining Co., are not yet known. This company is headed by D. K. Ludwig, of National Bulk Carriers, Inc.

Shaheen said his plant will be located on the Atlantic Coast, near the city of Colon. His company, he adds, has already sold the first seven years' production of the projected plant to majors who will supply Colombian and Venezuelan crudes.

Meanwhile, government officials in Panama said the $66-million to be invested in the two refinery projects represent the largest private investment in the country since the Panama Canal was built.

The 25-year agreements between the government and the two Panama-registered firms are identical, it was revealed.

Each company, within 2½ years, is to build a $22-million oil refinery, plus an $11-million petrochemical plant for the manufacture of chemical products such as fertilizers.

Each also agrees to build a pier capable of accommodating tankers and cargo vessels with a minimum displacement of 8,000 gross tons and 28-ft. draft.

Each company will pay 1¢ duty on each barrel of crude oil imported.

Both companies made advance duty payments of $200,000 when the contracts were signed on May 10. Each will also furnish a $500,000 bond to guarantee construction of its refinery.

In addition each company will grant 20 scholarships to Panamanians for specialized studies abroad in connection with oil refining.

The Panama government, for its part, leases a 150-hectare (370-acres) tract to each company at the nominal fee of $1 per year, for 25 years. The companies are exempt from import duties on construction materials and equipment.

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## U. S. Firms Submit Bids

**ARGENTINA—The government says that a "considerable number" of U. S. firms were among those who submitted offers to the government last week** in answer to the call for equipment and construction tenders on its $250-million oil-development program (PW—May4'56,p32).

Industry Minister Carlos Alsogaray says the government is "satisfied" with the offers received but has declined to identify the companies involved. A total of 140 offers is already in the hands of Yacimientos Petroliferos Fiscales, the government oil company. These do not include others received at government offices abroad.

"Naturally, many of these offers refer only to partial aspects of our program," the Minister said. "Others are simply expressions of interest in participating once specifications are drawn up.

"But," he added, "there are a certain number of concrete offers from the most important worldwide enterprises in this field. These permit us to expect that negotiations will result in successful realization of our program."

Due to the widely varied nature of the offers, the Minister indicated it would be some time before anything concrete will be known on results.

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## Signal Gets First Grant

**GUATEMALA—Signal Oil & Gas Co. is set to get the first oil concession under Guatemala's new oil law—probably before the end of this month.**

Last week Signal Exploration Co., a subsidiary of the California independent, was declared eligible for one 670,000-acre area in southeastern Peten. Signal has three other smaller claims pending in Izabal, but its Peten claim was the only one out of 91 presented by 29 different applicants that was completely free of overlaps (PW—May4'56,p35).

Final title to the Peten claim is now being drawn up for Signal by the Ministry of Economy.

Negotiators are now on hand to work out agreements on overlaps for the interested companies.

"Eligibility for the remaining 90 claims will be announced simultaneously within the next few days," Bureau of Mines chief Rodrigo Cordova Cerna said last week.

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## Ten-Man Oil Board Named

**EGYPT—Ten members were named for the "administrative board" of the newly formed Supreme Oil Authority** by a decree passed last week by the Minister of Commerce & Industry. Originally the government had announced the new unit would have a five-man board.

The group is headed by Col. Mahmoud Youness, Egypt's petroleum and mining boss. Among the others are: Gen. Fathy Rizk, head of the army's supply department; Dr. Mahmoud Abu Zeid, outgoing director of the Fuel Dept. (PW—May18'56,p24); Dr. Rashed el-Barrawi, president of the government-sponsored Industrial Bank; the undersecretary of state for finance; the director of the Egyptian Republic Railways; the legal counsellor of the Ministry of Commerce; the dean of the Mines & Petroleum Dept. of Cairo University's School of Engineering.

The board's first task will be to grant concession rights to the companies that have made applications for oil exploration in the available open areas in Egypt.

## Jobbers' Costs and Profits in 1955, as NOJC Sees Them

| | Gasoline | | Fuel Oil | | Other Products, Per Cent of Sales | Total, Per Cent of Sales |
|---|---|---|---|---|---|---|
| | Price Per Gallon | Per Cent of Sales | Price Per Gallon | Per Cent of Sales | | |
| Sales Less Discount | $ .2391 | 100.00% | $ .1323 | 100.00% | 100.00% | 100.00% |
| Cost of Sales | .2043 | 85.45 | .1035 | 78.23 | 81.59 | 82.04 |
| **Gross Profit on Sales** | **.0348** | **14.55** | **.0288** | **21.77** | **18.41** | **17.96** |
| *Expenses:* | | | | | | |
| Delivery Expense | .0096 | 4.02 | .0082 | 6.20 | 4.78 | 5.01 |
| Bulk Plant Expense | .0038 | 1.59 | .0034 | 2.57 | 2.28 | 2.06 |
| Sales Expense | .0084 | 3.51 | .0053 | 4.01 | 4.13 | 3.78 |
| Administrative Expense | .0106 | 4.83 | .0077 | 5.82 | 4.52 | 5.03 |
| Total Expense | .0324 | 13.55 | .0246 | 18.60 | 15.71 | 15.88 |
| **Profit From Operations** | **$ .0024** | **1.00%** | **$ .0042** | **3.17%** | **2.70%** | **2.08** |
| Discounts Earned & Other Income | | | | | | .59 |
| Net Profit Before Taxes | | | | | | 2.67 |
| Income Taxes | | | | | | 1.00 |
| **Net Profit After Taxes** | | | | | | **1.67%** |

# Jobbers Profit Ratio Holds Steady

**The National Oil Jobbers' Council has issued a 1955 "jobbers' cost of living survey" which shows that jobber profit ratios were much the same last year as they were the year before.**

NOJC held its midyear meeting at Atlanta last week. About 200 jobbers were there to discuss commercial accounts, service station "over-building," competition on proposed through highways, and changes in jobber-supplier contracts. Basic to all of these agenda highlights, however, was a committee report on jobbers' costs and profits in 1955. The survey, covering 21 representative companies, was adopted by NOJC as an accurate picture of jobber costs and profits. Here's what it says:

**Jobbers' gross profit on sales is up over 1954, but so are their expenses. Net profit ratio is about equal to that of 1954.**

A comparison of NOJC's jobber cost-profit studies for 1954 and 1955 shows that: Gross profit on sales went up from 16.5% to 17.9%; expenses rose from 14.7% to 15.8%; and profit from operations increased from 1.8% to 2.1%. Other income, however, brought both 1954 and 1955 profit before taxes to 2.7%. After-taxes net profit in 1955 was 1.7%, just a shade higher than the 1954 figure of 1.6%. (Taxes in '54 averaged 1.1% of sales; in '55 they averaged 1.0%.)

NOJC's cost-profit survey for 1953 showed that jobbers that year had a net profit after taxes of 2.2% of total sales.

**Jobber costs for bulk-plant operation, sales, and general administration jumped considerably in 1955, while delivery expenses dropped,** according to NOJC. In 1954, bulk-plant expenses averaged 1.5% of sales, but last year this cost rose to 2.1%. Sales expenses went up from 3.6% in 1954 to 3.8% in 1955. Administration cost jobbers 4.5% of sales in 1954; it jumped to almost 5.1% in 1955. Delivery expenses, however, went down—but only slightly. In 1954 it cost jobbers 5.1% of sales to deliver their products; in 1955, delivery cost was 5.0%.

**NOJC reports that jobber profit ratios are greatest in the Midwest. Eastern jobbers make slightly less, while southern jobbers are way behind in profit ratios.**

A regional breakdown of the cost-profit report covers 96 jobbers including many who did not give cost-profit information on specific products. Average net profit after taxes for 48 midwestern companies is 2.75%. Statistics from 6 eastern companies give an average net profit after taxes of 2.59%. But the profit average of 42 southern jobbers is only 1.67%.

In 1954, net profit after taxes averaged 2.9% in the Midwest, 1.9% in the South, and 1.7% in the East. This means that from '54 to '55 jobber profit ratios: fell 0.15% in the Midwest and 0.23% in the South, but rose 0.44% in the East.

**Some jobbers say that the static profit ratio has resulted from the loss of large commercial consumers to direct distribution from supplier companies.** Jobbers contend that they are losing out on high-gallonage consumers when suppliers quote more attractive prices than jobbers can afford to offer.

Several large suppliers, however have adopted a hands-off commercial-accounts policy. Standard Oil Co. (Ind.), for instance, announced last fall that its commercial consumers will have to pay at least as much as jobbers for their gasoline (PW—Dec.9'55,p36). And Shell Oil Co. made a similar announcement a short time later (PW—Dec.30'55,p21).

# What's New / IN MARKETING

## U.S. Motor Fuel Consumption Up 6.3%

**U.S. consumption of motor fuel rose to 54.3-billion gal. in 1955, a new all-time high, and 3-billion gal., or 6.3%, more than consumption in 1954,** according to American Petroleum Institute figures just released.

States which showed the greatest percent of increase from 1954 to 1955 were: Louisiana, 13.5%; Oklahoma, 11.6%; Florida, 11.3%; Nevada, 11%; and Arizona, 10.1%.

API's survey shows that 19 states are now consuming a billion or more gal. a year. California leads the parade with a 5.6-billion-gal. total. Next in line are: Texas, 4.4-billion gal.; New York, 3.5-billion gal.; Ohio, 2.9-billion gal.; and Pennsylvania, 2.8-billion gal.

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**Louisiana jobbers have added their voices to the chorus of oil marketers opposing trading stamps** (PW—May 18'56,p48). The Louisiana Oil Marketers Assn. last week gave endorsement to a bill in the state legislature which would place a heavy financial burden on stamp companies operating in Louisiana. The bill would require a stamp company to pay a $25,000 license fee and $300 for each location at which it operates. Passage of antistamp bills in state legislatures, however, has been very difficult. Last year, for instance, some 50 antistamp bills were introduced in state legislatures; only two were passed (PW—Apr.13 '56,p33).

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**Lion Oil Co., which began marketing in Louisiana only last year, has opened 15 new service stations there.** The new outlets, which will be served by Lion's bulk plant at Monroe, are located in Monroe, West Monroe, Bastrop, Winnsboro, Archibald, and Mangham. New bulk plants have been opened at Ferriday and Farmersville.

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**Sun Oil Co. is starting a half-million-dollar expansion of its Newark (N. J.) marketing terminal, which will handle most of the company's products to be sold in New York and New England.** The expansion is expected to be completed this fall, in time to handle an increased flow of products through a new 14-in. pipeline now under construction from the company's Marcus Hook (Pa.) refinery. Sun says that the larger pipeline and terminal "will eliminate direct supplemental shipments from Marcus Hook to New England, and thus increase the efficiency of Sun's marketing distribution system between these points."

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**Three West Coast oil companies have got together to establish a new organization to market their asphalt paving materials throughout Southern California, Arizona, and Nevada.** Douglas Oil Co. of California, Envoy Petroleum Co., and Macmillan Petroleum Corp. have joined hands to establish United Asphalt Co. United was formed "to offer faster and better service to customers by drawing on the wide variety of products and large inventories maintained by the three oil companies."

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**The Federal Trade Commission has ended a seven-year hassle over the merits of AD-X2, controversial battery additive, by dismissing false advertising charges against the manufacturer of the additive.** FTC's final ruling was based on testimony of 45 satisfied users of AD-X2. Scientific findings of the National Bureau of Standards, which held that the additive had no beneficial effect on automobile batteries, were overruled.

The commission's unanimous decision upheld the recommendation of preliminary examiner William L. Pack, made last November (PW—Dec.2'55,p26).

FTC initiated the false advertising charges after the Bureau of Standards, the U. S. Post Office, and a committee of prominent scientists had all attacked AD-X2 as worthless.

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**Shell Oil Co.—spurred on by the success of its first driver-safety campaign—is launching another.** This one, too, is designed to reduce highway accidents—and stimulate Shell sales.

Like the first series, the new campaign will stress the quiz idea, instead of scare pictures or slogans (PW—Jan.27'56,p36).

The campaign will be carried on through newspaper advertising. Aimed at both the physical and mental problems of driving, the ads will appear in groups of two. They will be published just before the three major holidays, and in the middle of summer, when large numbers of motorists are on vacation.

Approximately 20-million newspaper readers saw the first series of six ads. These ads were run twice a week for three weeks in 235 newspapers. The new ads will run in more than 200 daily newspapers covering more than 250 cities.

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**Shell Oil Co. is the latest major to show interest in the growing gasoline market of the Pacific Northwest.** Shell has just announced a $1-million marketing expansion there. Shell's northwest plans include new service stations, terminals, bulk plants, and other marketing projects.

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**Constant competition within the petroleum industry is the public's protection against price fixing, but this protection is "no excuse for violent price gyrations that shake gasoline retailers out of their stations in costly numbers,"** according to Dwight T. Colley, vice-president and general manager of Atlantic Refining Co.

Colley told the Independent Oil Men's Assn. of New England last week that the plight of the dealer convinced his company to adopt its "suggested minimum retail gasoline price plan" (PW—Dec.16'55,p31). "We are not attempting to fix prices," Colley says, "but we are trying to give the dealer information that may improve his profits." Colley says that "price gyrations" in Pennsylvania have been slowed down since Atlantic put its plan to work there last December.

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**The National Oil Jobbers Council is in better financial condition than ever before. But its internal relations are less than satisfactory.**

A highlight of NOJC's meeting in Atlanta last week was a financial report showing that the council expects to round out 1956 with a surplus of almost $5,000. The year's expenses are estimated at more than $54,000.

However, General Counsel Otis Ellis told the meeting, "I have seen more dissension, more forming of little cliques, and more personality splits and clashes within the council in the past two years than in the four years preceding."

DEPT/Refining

# What Does Maintenance Really Cost?

● A new yardstick for measuring maintenance costs may help refiners cut operating expenses.

● Net result of the formula is a ratio which is found by comparing maintenance costs with total replacement costs.

**Refiners are giving increasing attention to cost of maintenance, which now represents one-third to one-half of refinery payroll costs. But inability to pin down these costs unit by unit has blocked a realistic attack on big expenses.**

Since big maintenance means big expense, it's understandable why refinery management is trying to learn where it stands in this field. This need involves both the cost of maintenance and the result of maintenance activity.

That's why maintenance (and related subjects, such as corrosion) is usually found on the meeting program of the American Petroleum Institute's Division of Refining.

**A trio of Sohio engineers came up last week with a new way to measure maintenance costs. This formula determines maintenance cost as a percentage of replacement value of various units.**

The three are E. S. Bale, E. L. Mast, and R. E. Wester. Bale is chief of the operating staff, manufacturing department; Mast is section supervisor and Wester is an engineer in the facilities section. Their findings were reported in a paper which Bale presented at the Division of Refining's 21st midyear meeting, in Montreal.

Bale said the new formula grew out of three premises:

- The largest factor in determining maintenance expense is the number of facilities installed.
- Investment cost is a good measure of facilities installed, if corrected for inflation in labor and material unit costs.
- Total direct maintenance cost is more significant than just the labor component within it.

**In their look at maintenance, the Sohioans included all labor and material of mechanical crafts, including common labor, within limits of federal income tax regulations on expenditures.**

This broad use of the term leaves out only capital improvements. The three say that there is considerable overlap among various categories of mechanical work. They say it is difficult to obtain any consistent breakdown of such work, even within a single plant.

Bale admitted that "maintenance is hard to get a handle on. Made up, as it is, of an ever-changing procession of individual jobs, maintenance is elusive and hard to measure in general terms, and much too complicated to handle in detail."

From the over-all point of view, Bale reported, the effect of the work done is not changed by subdividing it. But he stressed that the definition does not include maintenance services, such as trucking, nor does it include maintenance supervision, planning, engineering, and general administrative expense.

**The Sohio engineers used their formula in a study of several refinery maintenance programs. The study showed that the resulting ratios gave them a workable yardstick for comparing the variables in maintenance costs.**

By reducing the factors of size and complexity, the three found it easier to pinpoint the probable causes of variations in the ratios. They found, further, that these variations are largely due to differences in level of operation, type of process, soundness of design, and organization and skill of the mechanical and operating functions.

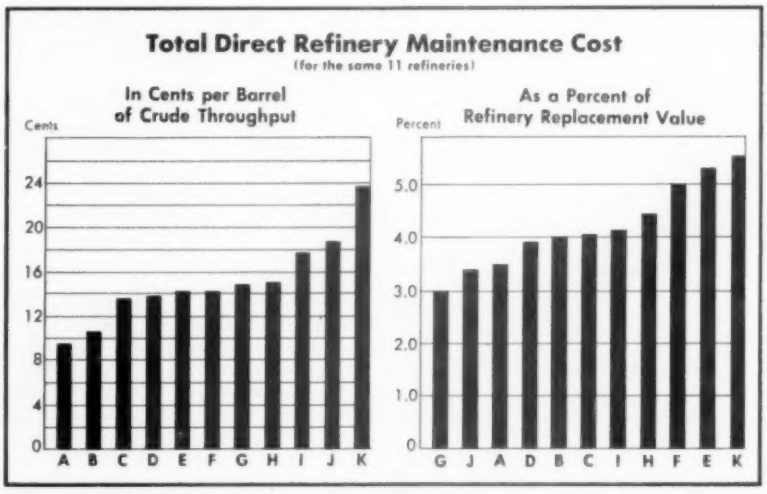
**The Sohioans also found there is less difference between plants in maintenance costs of major processing equipment than there is in maintenance costs of "other facilities." The latter represent about one-half the usual plant investment. Findings of the study indicate maintenance of "other facilities" may be the major variable in total maintenance costs.**

Bale said "quite a difference" in maintenance ratios was found in various processes. "In general, one might conclude that the processes involving higher temperature, higher pressure, or corrosive material will have higher maintenance ratios," Bale added.

By comparing maintenance ratios for equipment in similar service, good and bad units can be readily identified.

**Such variations do not show up clearly, if at all, when other methods of computing costs are used. Hence refiners haven't been able to determine exactly what they were spending for maintenance on various units.**

Many refiners presently figure their maintenance costs as a function of production, in terms of cents per barrel of crude throughput. This num-




TWO WAYS OF MEASURING MAINTENANCE, the common way (left) and Sohio's new way. Note how standings of the same refineries vary under the two systems.

ber is easy to obtain for most operations. The values are simple numbers in the order of 10¢ to 25¢, so they are easy to remember and to compare.

But, Bale pointed out, wide variations appear. The higher values are almost three times the lower, whereas the range is less than two to one when maintenance ratios are used (chart).

Bale said the variations in the first instance do not reflect accurately the differences in maintenance standards, since some of the better-maintained plants may be found at opposite ends of the scale. Since other variables do not explain these differences, the Sohio engineers concluded that the throughput rate is a poor basis for maintenance comparison.

This is so, Bale explained, because of differences in crude source (some crudes are more corrosive), plant facilities (secondary operations, like alkylation, require more maintenance than simple topping), and product demand (more products mean more processing, more maintenance).

**Some refiners express maintenance in terms of total dollars spent. Others count pieces of equipment, on the theory that more parts mean more maintenance and higher costs.**

But using total dollars, while useful in controlling maintenance of a specific plant, does not permit valid comparison with similar units in different plants, the three found.

Counting equipment also has its drawbacks, Bale reported. For example, this system does not take into account the size of a part. Too, the number of pieces may be difficult to count, and almost impossible to weigh and summarize for complete refining units.

That's why maintenance ratios based upon capital replacement values may bring some semblance of order to maintenance comparisons, the three hold. While such comparisons are not exact, they may help find areas of possible improvement.

**The trio also said more study is needed to help refiners determine whether they are getting a dollar's worth of return for each dollar spent in maintenance.**

Bale pointed out that maintenance buys safe operation, efficient performance, continuity of operation, quality of product, and optimum life for capital investment.

"But how do we know we are getting what we pay for?" Bale asked. He said these physical results of maintenance can be partly measured by observation and inspection, and by analysis of the failure-rate.

Though these help, the three feel that a better way is needed to measure the effect of maintenance as a whole.

# What's New / IN REFINING

**Hancock Chemical Co. is doubling capacity of its 130-ton-daily sulfur-recovery plant** in the Wilmington (Calif.) area.

The plant removes sulfur from hydrogen sulfide, stripped from waste recovery gases by use of monoethanolamine. Output of the new installation, in addition to the present facility, will service Richfield, Texaco, and General Petroleum refining plants in the area.

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**Canadian Oil Companies, Ltd., will step up production of petrochemicals by expanding facilities at its Sarnia refinery this fall.**

Key units in the $3-million expansion program are a 4,400 b/d Platformer and a 3,650 b/d Udex unit. These units will be used to extract and produce benzene, toluene, and xylene aromatics.

Major units at the refinery were closed down this month for the annual turnaround and to permit tying in 5,000 b/d of additional throughput capacity, raising total capacity to 30,000 b/d.

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**Richfield Oil Corp. is reportedly considering a 690-acre site in northwest Washington for construction of a $50-million refinery.**

The site is on the Tulalip Indian reservation, west of Marysville. Congressional legislation would be necessary to permit the Indians to sell.

The proposed refinery would be built on Port Gardner Bay. It could be supplied with crude oil either by tanker or by the Trans-Mountain Oil Pipeline from Canada, which terminates about 40 mi. north of Marysville.

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**The first Unifining unit in West Germany has gone on stream** at the Hannover refinery of Gewerkschaft Erdol-Raffinerie Deurag-Nerag.

The 1,400 b/d Unifining unit prepares feed stock for a 3,000 b/d Platformer that went on stream at the same time.

Both units were designed, engineered, and licensed by Universal Oil Products Co.

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**Ethyl Corp. will begin producing vinyl chloride monomer at a new plant it will build at Baton Rouge, La.** The company says the plant will cost "several million dollars" and will be completed by late 1957. Output will go to the plastics industry for manufacture of polyvinyl chloride. Initial output will be sold under long-term contracts.

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**Manufacture of petrochemicals will be nearly doubled at the Naphtachimie plant near the Lavera refinery, Marseilles, France.**

The plant is to be converted to use either a light-naphtha or gasoline feedstock. Ethylene capacity will be raised from 10,000 tons per year to 18,000 tons per year. Propylene capacity will be doubled, to 18,000 tons. Some high-octane gasoline component also will be produced.

The Naphtachimie plant obtains its feedstock from the Lavera refinery, which is operated by Societe Francaise des Petroles BP, French associate of British Petroleum Co., Ltd.

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**Construction will start early next month on Humble Oil & Refining Co.'s expansion of its Baytown (Tex.) butadiene plant.**

Production of butadiene will be increased from 49,000 short tons per year to 65,000. The expansion will be primarily in feed preparation and butadiene recovery and purification sections.

Completion is scheduled for next year.

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**Phillips Chemical Co. will build a sulfur plant in Andrews County, West Texas, adjacent to the Andrews natural gasoline plant now under construction.**

Acid gas feedstock for the sulfur plant will come from the natural gasoline plant. Production is expected to be about 60 long tons a day.

•

**Phillips Petroleum Co. and Magnolia Petroleum Co. have started operations at their jointly owned Bradley gasoline plant,** in Garvin County, Okla. The new plant is designed to process about 60-million cu. ft. of natural gas daily. After about 160,000 gal. per day of natural gas liquids are extracted, the gas is sold to industrial markets in Oklahoma.

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# Gas Price Case Appealed

## Panhandle Eastern asks Supreme Court to rule that 'fair field price' principle be accepted for pipeline-produced gas.

**Panhandle Eastern Pipe Line Co. asked the U. S. Supreme Court this week to rule that interstate gas transmission companies are entitled to a "fair field price" for gas produced in their own fields.** Attorneys for Panhandle filed a petition asking the high court to review a decision of the U. S. Court of Appeals for the District of Columbia.

If the Supreme Court agrees to hear the issue, it won't come to a head for several months. The court begins its summer recess early in June.

**The "fair field price" formula was adopted by the Federal Power Commission in a precedent-making decision in April, 1954.** It allows a pipeline company to charge off the "commodity value" of its own gas as the base of its transmission rate.

The commodity value is the weighted average of all prices received in the same area by independent producers selling at arms-length bargaining.

**FPC had previously permitted interstate pipeline companies to earn a return only on the cost of production, without regard to the value of the gas in the open market.** It justified the switch to the "fair field price" approach on two grounds:

- An arbitrarily depressed price, such as that possible from application of the cost rate-base method, accelerates consumption and fails to encourage the discovery and development of natural gas.
- It's in the public interest for pipelines to produce a portion of their own gas, thereby reducing their dependence on purchases from independent producers.

The city of Detroit, and Wayne County, Mich., joined in asking the courts to force FPC to return to the old cost approach.

**The U. S. Court of Appeals ruled last December that FPC had failed to justify its "fair field price" approach as adequate. It suggested that weight be given to production costs.**

This, says Panhandle attorneys, destroys the validity of the commodity-value approach. They claim the appeals court side-stepped the issue and bowed to the "sacred cow of tradition."

A Federal Power Commissioner, Seaborn Digby, has been urging the Justice Dept. to appeal the case to the Supreme Court on behalf of FPC itself. But the Justice Dept. is reportedly lukewarm about following the suggestion. Deadline for such action is May 28.

**Panhandle attorneys say their appeal is also of tremendous importance to independent producers, who are subject to federal regulation under the Supreme Court's decision in the Phillips case.**

The "fair field price" theory was the heart of the Harris-Fulbright bill, vetoed by President Eisenhower. It would have allowed both independent producers and pipeline companies to receive commodity value for their gas.

As a result of the veto, says Panhandle, FPC's rate-fixing problems are "insuperable." And if the appeals court's decision on pipeline-produced gas rates is allowed to stand, all gas producers will be subject to utility-type regulation.

If the decision is set aside by the Supreme Court, on the other hand, Panhandle says, such favorable action would remove most of the obstacles to FPC determination of producer rates—by eliminating the time-consuming, painstaking problem of weighing production costs.

**Another point raised in the current Panhandle appeal is the treatment of a pipeline company's gasoline-extraction costs.**

FPC had ruled in 1954 that Panhandle's gasoline-extraction business was not within its jurisdiction. Thus, it was not necessary for FPC to consider costs and profits from this business in determining the rate for gas sales. The appeals court, however, also overruled FPC on this approach, saying FPC should continue weighing gasoline-extraction costs against by-product sales in fixing gas rates.

**If the appeals court decision stands, says Panhandle, the next step may be assertion of federal jurisdiction over the sales price of gasoline and even over crude oil produced in connection with gas production.**

Panhandle officials have expressed confidence, however, that the "fair field price" theory ultimately will be upheld by the courts.

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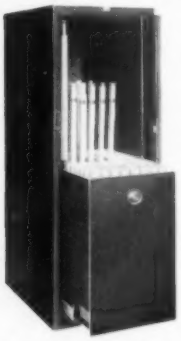

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# What's New / IN TRANSPORTATION

**A 700-ft. length of aluminum pipeline, carrying crude under the brackish waters of Lake Maracaibo for the past six months, has been "essentially unaffected,"** according to Aluminum Co. of America.

Alcoa made the 4-in., schedule-40 pipe, which was inspected this week by the line's user, Creole Petroleum Corp.

Creole tested the pipe primarily to overcome damage of a small aquatic animal—the teredo (PW—Nov.11-'55,p32).

•

**A Dallas producer is bucking South Saskatchewan Pipe Line Co. for the right to build a gathering system in the Cantuar-Dollard oil fields of Canada.**

Royal Pipe Lines Co., Ltd., a new subsidiary of D. D. Feldman Oil & Gas Co., of Dallas, applied to the Dept. of Mineral Resources of Saskatchewan last week for permission to lay a 300-mi. crude-gathering system. This would include a 10-in. line connecting the Catuar and Dollard fields, and a 6-in. gathering system to connect production south of the Dollard field to the main trunk that they also propose to build—a 12-in. line that would connect with the Interprovincial pipeline.

The trunk would cross the southern part of the province, to tap the Midale field and the recent Mississippian North Roncott 34-9 light-oil discovery, in the south central section, before swinging northeast to join Interprovincial.

South Saskatchewan Pipe Line Co. has applied for permission to connect the Cantuar-Dollard area to its present line from Cantuar to Regina (PW—Apr.27'56,p33). A public hearing will determine which application will get approval.

•

**American Louisiana Pipe Line Co. wants to step up capacity of its nearly completed Louisiana-to-Michigan natural gas line.**

The company told the Federal Power Commision last week that it has acquired additional reserves of 1.2-trillion cu. ft. since construction started. It wants to divide additional throughput of about 36-billion cu. ft. per year between two affiliates—Michigan Wisconsin Pipe Line Co. and Michigan Consolidated Gas Co. —for distribution in Michigan and Wisconsin.

If FPC approves, American Louisiana will add 46,000 hp. to its compressor capacity. Daily throughput capacity would total 400-million cu ft.

The expansion would cost about $16-million.

•

**Southern Pacific Pipe Lines, Inc., is at the financing stage of its proposed new products line from San Francisco Bay to Fallon Naval Air Station, Nev.** (PW—Apr.13'56,p35).

The Southern Pacific Co. subsidiary applied to the California Public Utilities Commission last week for permission to borrow $16-million—half from Mellon National Bank & Trust Co., of Pittsburgh, and half from Guaranty Trust Co., N. Y.

The pipeline company will draw on the bank credit as the 338-mi. line progresses. It will pay a standby fee of ¼ of 1% on the unborrowed balance. Repayment of 40% of the total loan, at 4% interest, is scheduled to start Apr. 1, 1958, in 32 quarterly installments. The remainder, at 4⅛%, is to be payable Apr. 1, 1966.

•

**Trust Pipe Line Co. will build and operate products lines into Webb and Abilene Air Force Bases, in Texas.**

The Air Force approved the two projects last week. Trust is a subsidiary of Cosden Petroleum Co.

The installations will be part of an over-all Air Force program to pipe fuel into all bases where a particular fuel is in high demand (PW—Mar. 16'56,p33). About a dozen bases will have pipeline service when the new lines are completed. The Air Force and pipeline companies are still studying the feasibility of service to some 33 more.

•

**Northern Gas Co. has asked the Wyoming Public Service Commission for permission to build pipelines to Diamond Dome and Horn Bros. fields in Carbon County.** The company has agreed to buy all gas produced in the two oil fields, at a minimum rate of 1⅓-billion cu. ft. per year, at 13¢ per Mcf. Both new lines would connect with Northern's mainline between Medicine Bow and Laramie.

| ADDITIVES | GULF COAST | | MID-CONTINENT | | WEST COAST | |
|---|---|---|---|---|---|---|
| | $ Saving | % Saving | $ Saving | % Saving | $ Saving | % Saving |
| Du Pont Antioxidant No. 22 | $2,250 | 6.7% | $2,250 | 6.7% | $2,400 | 7.0% |
| Du Pont Fuel Oil Additive No. 2 | $1,680 | 8.3% | $1,710 | 8.4% | $1,850 | 8.9% |
| Du Pont Lube Oil Additives | $1,830 | 12.0% | $1,860 | 12.0% | $2,000 | 12.5% |

Shown above are nine typical situations—three locations, three additives. They illustrate how substantial sums can be saved when you order Du Pont additives in 4,000-gallon tank-car lots. The saving is over the costs of the same quantities in less than carload lots, in drums. The total savings shown reflect lower product cost and lower freight rates.

# *Four-figure savings* are yours each time you order a Du Pont additive by the tank car

If you have been buying your additives in drums—either in carload or less than carload quantities—it will pay you to investigate the savings in delivered cost that are possible by ordering in tank-car lots.

**For example . . .**

The above chart shows how refiners in three areas can save from $1,680 to $2,400 simply by ordering a Du Pont additive by the 4,000-gallon tank car instead of equal quantities in partial car shipments in drums. These figures are, of course, based on the freight rates for only three locations; savings will vary somewhat for other receiving points. However, the saving will be decidedly worthwhile anywhere . . . for any one or more of the products listed.

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To answer that question for you, one of our nearby representatives will be glad to call at your refinery, study your freight rates and inventory patterns. He will then determine the most convenient handling method for you and figure the exact saving you can make. Phone, write, or wire us . . . today.

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# The Market Place AROUND THE WORLD

Prices compiled for PETROLEUM WEEK by Platt's OILGRAM Price Service and National Petroleum News, McGraw-Hill Publications

All Prices as of May 21

Bold face type indicates changes from previous week

## KEY PRICES—REFINED PRODUCTS

(¢ per gal. except dollars per bbl. where $ is shown)

### Western Hemisphere

**U. S. Gulf Coast, Cargoes**
- Gasoline, 98 oct prem. . . . 13.25-13.75
- Gasoline, 92 oct reg. . . . 11.5-12
- Kerosine . . . . 9.5-9.75
- Heating oil, No. 2. . . . 8.75-9.5
- Gas oil, 48-52 d.i. . . . 9.125-9.375
- Fuel oil, bunker "C" . . . . $2.10-2.15

**Caribbean, cargoes**
- Avgas, Grade 100/130. . . . 16.75
- Gasoline, 93 oct research prem. . . . 11.75
- Gasoline, 87 oct research reg. . . . 10.5
- Gasoline, 79 oct research. . . . 9.75
- Gasoline, 70-72 oct motor method. . . . 9.5
- Kerosine . . . . 9.5
- Heating oil, No. 2. . . . 8.75
- Gas oil, 48-52 d.i. . . . 9.125
- Fuel oil, bunker "C". . . . $2.10

**New York Harbor, barges**
- Kerosine . . . . 10.85
- Heating oil, No. 2. . . . 10.35
- Fuel oil, No. 6. . . . $2.65

**Okla.-Group 3, northern shpt, bulk**
- Gasoline, 88 oct reg. . . . 11.75-12
- Kerosine . . . . 10-10.25
- **Heating oil, No. 2. . . . 8.875↓-9.5**
- Fuel oil, No. 6. . . . $2.00-2.20

**Chicago, bulk**
- Gasoline, 91 oct reg. . . . 12.75-13.25
- Heating oil, No. 2. . . . 10.1-11.1
- Fuel oil, No. 6, high sulfur. . . . 7.7-8.25

**Los Angeles, rack**
- Gasoline, 84 oct reg. . . . 12.4-13.15
- Diesel fuel, PS 200. . . . 9.3-9.8
- Light fuel, PS 300. . . . $2.65
- Heavy fuel, PS 400. . . . $2.15-2.25

**Natural Gasoline, Grade 26-70**
- FOB Group 3. . . . 4.5
- FOB Breckenridge, Tex. . . . 4

**LP-Gas—Propane**
- Oklahoma (Group 3). . . . 4.5

**Penna Lubes**
- **Bright stock, 25 p.t. . . . 25↑-26↑**
- **200 vis. neutral, 25 p.t. . . . 21.5↑**

**Mid-Continent Lubes, Tulsa basis**
- Bright stock, solvent 95 v.i. . . . 24-25
- Neutral, solvent 200-210 vis. . . . 19.75-20.75

**Gulf Coast Lubes**
- Bright stock, solvent, 95 v.i. . . . 25
- Neutral, solvent, 200 vis. . . . 21.5

### Eastern Hemisphere

**Singapore, cargoes**
- Avgas, Grade 100/300. . . . 18.375
- Gasoline, 79 oct research. . . . 10.5
- Gasoline, 70-72 oct motor method. . . . 10.25
- Kerosine . . . . 10.125
- Gas oil, 48 d.i. minimum. . . . 9.75
- Fuel oil, light. . . . $3.30

## KEY PRICES—CRUDE OIL

(2¢ differential per deg. of grav. applies except as noted)

### Western Hemisphere

**United States (at the well)**
- Mid-Continent, 36.0-36.9. . . . $2.82
- North Dakota, 36.0-36.9. . . . 2.82
- Texas:
  - Gulf Coast, low cold test, 26.0-26.9. . . . 2.95
  - Gulf Coast, upper and lower, 26.0-26.9. . . . 2.82
  - West Texas sweet, 36.0-36.9. . . . 2.82
  - West Texas-New Mexico intermediate, 36.0-36.9 . . . . 2.75
  - West Texas-New Mexico sour, 32.0-32.9. . . . 2.61
  - East Texas, flat price. . . . 2.90
  - Mirando, 28.0-28.9 . . . . 2.96
- Illinois Basin, flat price. . . . 3.00
- **Penna Grade, Bradford dist, flat price . . . . 4.45↑**
- California, Signal Hill, 21.0-21.9. . . . 2.41†
- North Louisiana-Arkansas, 36.0-36.9. . . . 2.82
- Wyoming sweet, 36.0-36.9. . . . 2.82
- Wyoming sour, 32.0-32.9. . . . 2.48

**Canada (flat prices, at the well)**
- Acheson-Stony Plain (Alta.) D-2, D-3, L. C. . . . 2.54
- Leduc-Woodbend (Alta.) D-2, D-3. . . . 2.60
- Redwater (Alta.) D-3. . . . 2.49
- Daily-Mississippian (Man.). . . . 2.34
- Smiley-Viking (Sask.). . . . 2.26

**Venezuela (Cargoes, FOB lifting port designated)**
- Cumarebo, 48.0-48.9, Tucupido. . . . 3.40
- San Joaquin, 41.0-41.9, Puerto la Cruz. . . . 3.04
- Oficina, 35.0-35.9, Puerto la Cruz. . . . 2.80
- Tia Juana Medium, 26.5-26.9, Amuay. . . . 2.30*
- Bachaquero, 16.5-16.9, Amuay, Las Piedras. . . . 1.90**
- West Tarra, 40.0-40.9, Cardon. . . . 3.05
- Legunillas Heavy, Amuay, Cardon, Las Piedras, flat price. . . . 2.05

*Differential per ½ deg. grav.: (*) 2.5¢ bbl. (**) 3.5¢ bbl.*
*†Differential per deg. of grav. varies.*

### Eastern Hemisphere

**Middle East, Persian Gulf (Cargoes, FOB lifting port)**
- Arabian, 36.0-36.9, Ras Tanura. . . . 1.97
- Basrah, 32.0-32.9, Fao. . . . 1.79
- Iranian, 34.0-34.9, Bandar Mashur. . . . 1.91
- Iranian, 34.0-34.9, Abadan. . . . 1.86
- Iraq, 36.0-36.9, Fao. . . . 1.87
- Kuwait, 31.0-31.9, Mina-al-Ahmadi. . . . 1.72
- Qatar, 39.0-39.9, Umm Said. . . . 2.06

**Middle East, Eastern Mediterranean**
- Arabian, 36.0-36.9, Sidon. . . . 2.46
- Iraq, 36.0-36.9, Tripoli, Banias. . . . 2.46

**Far East, (Cargoes, FOB Lutong, Sarawak)**
- Seria Light, 37-38. . . . 2.60

## KEY TANKER RATES

(Last paid, per long ton, single voyage)

- U.S. Gulf-New York, clean. . . . (USMC+30%) $3.71**
- U.S. Gulf-New York, dirty. . . . (USMC+75%) $4.99
- **NWI-USNH, dirty . . . . (USMC+45%) $3.92↓**
- NWI-UK/Continent, dirty. . . . (Scale+92½%) 62/7*
- **Pers. Gulf-UK/Cont., dirty (Scale+115%) 109/1*↑**
- **Persian Gulf-USNH, dirty. (USMC+40%) $17.78↑**

**Sterling  **Owners asked $5.70 (USMC+100%)*

# The Market Trend

## As New Jersey Goes, so Goes the World

**There's nothing like a price change on No. 2 fuel—or even the threat of a price change—to set teeth ajar for refiners and marketers.** Last week a general cut in distillate prices was threatened—from Arthur Kill, N. J. The oil world from Corpus Christi to Abadan was alerted for trouble.

**The move started very innocently and was confined to the state of New Jersey.** A marketer offered a summer discount of 0.5¢ a gal. to his contract reseller No. 2 transport accounts in that area. The discount was given to encourage jobbers to fill storage in the off-seasons, and also to give them price incentive to add to tankage. No other eastern marketer—up to then—had offered summer-fill discounts (PW—May18'56,p59).

**But a New Jersey discount could have a falling-dominoes effect by spreading all through industry.** The New Jersey No. 2 transport market is one of the highest-volume sales channels in the world. It is a 20-mi. strip of terminals and refineries, back to back, from Edgewater to Carteret. It is the refinery and terminal source of supply for most of the metropolitan New York area.

**If the New Jersey price crumbles, pressure would be strong for an immediate cut in No. 2 at the U. S. Gulf, and eventually in the Midwest.** And the Gulf Coast and the Caribbean beat as one heart when it comes to No. 2 fuel. Many world export contracts, particularly to Canada, call for Caribbean loadings at Gulf Coast or Caribbean prices, whichever is lower. If the Caribbean went down, tradition says, so would the Persian Gulf—or, in effect, the world.

**That's why all eyes are focused on New Jersey, to see if summer discounts become general there.** Because of the far-reaching implications, many marketers say they prefer to lose a few accounts rather than give allowances. The only alternative: Meet the 0.5¢ discount and "pull the house down."

**Avgas—Golden Glow:**

Some of the "gold" in Golden Esso Extra (PW—May11'56,p9) is rubbing off on aviation gasoline. Ever since the industry got the challenge of Esso's "super" motor fuel, avgas—with additives that are useful for high-class motor fuels as well—has tightened up.

**Motor Fuel:**

Long refinery strikes in the Midwest have been a prop to regular gasoline prices at the Gulf. Some upriver buyers have reached all the way to Texas City to pick up barge lots. The New Orleans area is cleaned out.

But some sources see storm clouds in the recent upswing in refinery runs in the nation. About the only way a Gulf Coast refiner can sell regular-grade in cargoes to the East Coast is to part with some hard-to-find premium in the bargain.

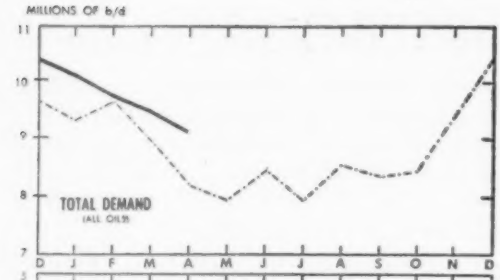
**Crude—Tight Spots and Loose:**

Pennsylvania crudes got their third increase this year—25¢ a bbl. on May 16. The reason: heavy demand and lower supply.

But sales haven't been so good for many producers in the Mid-Continent and the Rocky Mountains. Recent cut-backs by purchasers have ranged up to 25% in Kansas, Wyoming, and southern Oklahoma. After June things will start looking up.

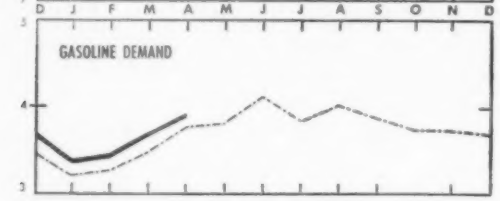
PETROLEUM WEEK'S

# Fingertip Figures



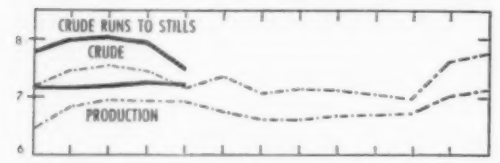

**TOTAL DEMAND**

| | |
|---|---|
| Latest 4-week average | 8.731 |
| Year ago | 8.041 |




**GASOLINE DEMAND**

| | |
|---|---|
| Latest 4-week average | 3.949 |
| Year ago | 3.899 |

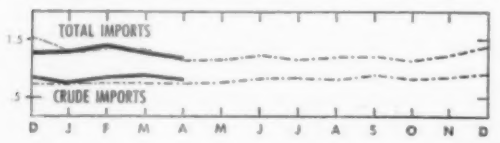



**RUNS TO STILLS**

| | |
|---|---|
| Latest week | 7.848 |
| Previous week | 7.911 |
| Year ago | 7.329 |

**CRUDE PRODUCTION**

| | |
|---|---|
| Latest week | 7.071 |
| Previous week | 7.029 |
| Year ago | 6.676 |



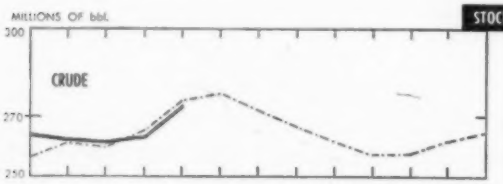

**TOTAL IMPORTS**

| | |
|---|---|
| Latest week | 1.350 |
| Previous week | 1.429 |
| Year ago | 1.048 |

**CRUDE IMPORTS**

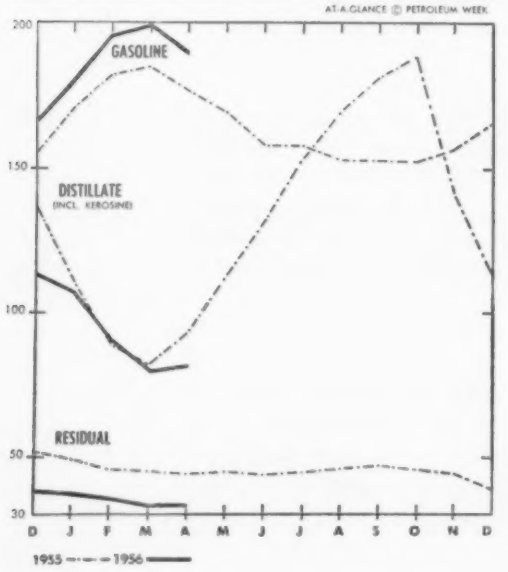
| | |
|---|---|
| Latest week | .816 |
| Previous week | 1.094 |
| Year ago | .716 |

STOCKS




**CRUDE STOCKS**

| | |
|---|---|
| Week ended 5-12 | 273.6 |
| Previous week | 275.4 |
| Year ago | 278.2 |




**GASOLINE**

| | |
|---|---|
| Latest week | 186.8 |
| Previous week | 187.7 |
| Year ago | 170.7 |

**DISTILLATES**

| | |
|---|---|
| Latest week | 88.4 |
| Previous week | 84.3 |
| Year ago | 100.2 |

**RESIDUAL**

| | |
|---|---|
| Latest week | 33.4 |
| Previous week | 33.1 |
| Year ago | 43.4 |

THE MONTH OF MAY could prove to be the turning point in what has been an excellent year to date for the petroleum industry.

Total demand in the first 18 days of May is going strong. It's running 8.3% ahead of the like part of last May. This is better than the average gain in demand for the first four months of the year, which was 6.8%.

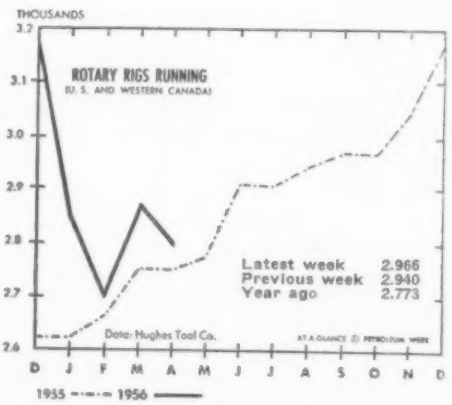
Supply is gaining even faster, however, and that's what is creating the real problem. Total new supply—domestic crude and natural gas liquids, plus total imports—has averaged 9,303,000 b/d so far in May. This level of new supply is 690,000 b/d above demand. Compared with last May, new supply is up 10.5%.

The industry's statistical position until the start of May was fine. New supply was just a little under demand.

But the oil industry seemingly finds difficulty in adjusting its rate of supply downward to meet the traditional midyear downturn in demand.

Demand so far in May has averaged 8,612,000 b/d. Compared with January (the peak month this year) demand is down 1,453,000 b/d. That's seasonally normal. New supply in May is only down 45,000 b/d from the January rate. That is seasonally abnormal—but unfortunately it is coming to be the *normal* trend each year.

To make proper adjustments, cutbacks are needed in both domestic production and imports. Current total U. S. output of crude and gas liquids is averaging 7,921,000 b/d, only 80,000 b/d under January—despite cutbacks in allowables. Total imports are now running at 1,365,000 b/d, a little above the January rate.


THOUSANDS
ROTARY RIGS RUNNING
(U. S. AND WESTERN CANADA)
Latest week 2.966
Previous week 2.940
Year ago 2.773
Data: Hughes Tool Co.
AT-A-GLANCE © PETROLEUM WEEK
D J F M A M J J A S O N D
1955 1956

## DEPT/Personals

**PARK L. MYERS** has been named assistant general sales manager of Hughes Tool Co. Myers was formerly North Texas division sales manager.

**C. HAINES FINNELL** has been named director of advertising and public relations for Union Oil Co. of California. **Paul H. Boyd** succeeds Finnell as manager of Union's eastern marketing territory. Boyd was formerly Los Angeles district sales manager.

**JAMES W. VATER** will superintend production of Ambassador Oil Co.'s central division at Oklahoma City. He was formerly chief engineer at Ft. Worth. **J. D. Christner,** formerly senior petroleum engineer for Stanolind Oil & Gas Co. at Abilene, Tex., succeeds Vater at Ft. Worth.

**RAY F. GRANLUND** has been named senior vice-president in charge of refining, petroleum and chemical sales, and traffic for Eastern States Petroleum Co. He was formerly vice-president of sales. **Marvin A. Bomer** has been named vice-president and general manager of the company's refineries. **Edward J. Fourticq** has been appointed vice-president for petroleum sales.

**P. L. MORELL** will manage the national sales division of The Texas Co., at New York. **C. R. Frohlin** succeeds Morell as New York division manager. Frohlin was formerly assistant sales manager of Texaco's central territory at Chicago. **J. K. Pannill,** formerly assistant manager of sales promotion for the company's northern territory, has been named assistant division manager of the Buffalo division.

**RAYMOND M. KENNETT** has been named assistant marketing manager of Tidewater Oil Co.'s eastern division. Kennett was formerly assistant district marketing manager at Los Angeles.

**JOE W. HANCOCK** will superintend drilling for Natural Gas Pipeline Co. of America. Hancock was formerly assistant superintendent. He succeeds **Charles I. Galloup,** who retired.

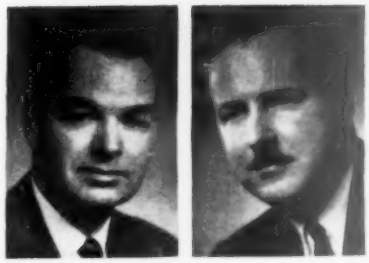
**M. L. HAIDER** has been elected president of International Petroleum Co., Ltd. Other new officers of the company are: **I. R. Cunningham, O. C. Wheeler,** and **R. H. Milbrath,** vice-presidents; **C. R. Chapman,** secretary; **G. R. Walker,** treasurer; and **C. J. Millar,** comptroller.

**MORGAN J. DAVIS,** vice-president and director of exploration for Humble Oil & Refining Co., has been elected executive vice-president, **Ed J. Hamner** succeeds Davis as director of exploration. Hamner was formerly assistant manager of the exploration department.

**LOYD WAGNER,** former drilling superintendent of Warren-Bradshaw Exploration Co.'s Oklahoma-Kansas district, has been transferred to Midland as drilling superintendent for the West Texas-New Mexico district. **Levi Schrock** has been promoted from toolpusher to drilling superintendent of the West Central-West Texas district.

**ROLLIN ECKIS** has been elected executive vice-president of Richfield Oil Corp. He was formerly vice-president and manager of exploration. Eckis joined Richfield in 1937 as Bakersfield (Calif.) district geologist. He was named assistant chief geologist in 1943 and later directed geological work in the company's Cuyama Valley (Calif.) and Wheeler Ridge (Calif.) fields.

**H. E. (Hickman) HENSLEY** will superintend Humble Pipe Line Co.'s East Texas division at Longview. Hensley joined Humble in 1927 in West Texas, and in 1951 was named district superintendent at Odessa. **E. R. Neath** succeeds Hensley as assistant division superintendent at Midland. **A. E. Payne** will be West Texas division superintendent in charge of pipelines, at Midland.



**W. E. BRATTON,** (left), and **RALPH L. CLARKE,** (right), will represent M. W. Kellogg Co. in the administration of engineering and construction contracts in the petroleum and petrochemical fields. Bratton was formerly head of the contract department of Lummus Co. Clarke, a petroleum engineer, was formerly with the Badger Process Division of Stone & Webster Engineering Corp.

**RALPH T. HANSON** has been appointed assistant manager of production for Continental Oil Co.'s southwestern region, with headquarters in Ft. Worth. He was formerly with Conoco's western region staff at Los Angeles. He succeeds **S. V. McCollum,** recently transferred to Houston as production manager for the company's CATC marine region.

**GRIER ZIMMERMAN** will supervise drilling operations for Kerr-McGee Oil Industries, Inc. Zimmerman was formerly a tool pusher and drilling engineer. **W. C. (Carl) Lawson** will be Kerr-McGee's Central Gulf division drilling superintendent, and **Kenneth W. Parker** will assist the company's general manager of drilling and production operations, at Oklahoma City.

**G. J. SMITH** will superintend foreign operations for Stanolind Oil & Gas Co., subsidiary of Standard Oil Co. (Ind.). Smith was formerly with Pan-American Production Co., another Standard subsidiary, which is being consolidated with Stanolind. Smith succeeds **T. H. Hendricks,** who has been named a consulting geologist for the company.

**WILLIAM R. CLARKE** (left), will manage production equipment sales, and **JACK JUDD** (right), drilling equipment sales, for Jones & Laughlin Co.'s supply division, Tulsa. Clarke was formerly a chief engineer, and Judd a rotary machinery salesman. These positions have just been incorporated into the general products sales division.

# WANTED

**A MANAGER OF REAL ESTATE**
**FOR THE MARKETING DEPARTMENT**
**OF A MAJOR OIL COMPANY**

Headquarters staff job is in a decentralized organization—he would be responsible for counseling, advising and assisting field operating personnel in real estate matters dealing with the buying and leasing—the sale and disposal of service stations, bulk plants and terminals—would develop criteria for appraising the desirability and value of sites—would appraise continually the relative desirability of purchase and lease programs.

He should have had practical experience in handling all phases of real estate transactions and be partially teacher, trainer, advisor and salesman.

In order to take advantage of employee benefits and to grow with the company, the man qualified for this position should be from 35 to 45 years of age—these are not absolute limits—possibly someone older or younger may be the man we want.

If interested please send a resume of your background and qualifications immediately. All information will be kept strictly confidential. This is an unusual opportunity for the right man with compensation commensurate with ability.

**P1658 Petroleum Week**
**330 West 42nd St.**
**New York 36, N. Y.**

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*CHICAGO: 520 N. Michigan Ave. (11)*
*SAN FRANCISCO: 68 Post St. (4)*

### POSITION VACANT

100 Civil Engineer Vacancies—The Michigan Civil Service Commission is currently recruiting to fill a large number of positions in the State Highway Department created by an expansion in the road construction program from $70 million in 1955 to $150 million in 1956. A comprehensive Engineer Trainee Program is offered to graduates of accredited engineering colleges. The program continues for 12 to 18 months including seven week assignments in each of the following: bridge construction, bridge design, road construction, road design, road surveys, maintenance, planning and traffic and testing and research (soils). One hundred and ninety-one persons have entered this program in the last seven years. One hundred and thirty-two remain. The figures speak for themselvs. Job opportunity, promotion, 40 hour work week, security, social security, state pension plan, vacation, sick leave and many other benefits generally available only under a progressive civil service system are yours when you work for the Michigan State Highway Department. Salary for the Engineer Trainee Program starts at $5115 plus $20 weekly expense allowance while on most training assignments with 6 month increases to $5470 in 18 months. First promotion brings salary range with maximum of $6800. Next promotion to project engineer carries salary at maximum of $8150. Write for application for Engineer Trainee I to Michigan Civil Service, Recruitment and Placement, Lansing 13, Michigan.

### POSITION WANTED

Retail Sales Manager. Service station supervisor, fifteen years major and trackside experience, now employed, seeks change where advancement is possible. PW-1793, Petroleum Week.

### SPECIAL SERVICE

Venezuelan Oil Scouting Agency. Periodic reports—maps—newsletter. Mail: Vosa, Apartado 3963, Caracas. Cables: Bosa, Caracas. Telephone 544802. Neal VanMiddlesworth.

## PROFESSIONAL SERVICES

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***Engineers***
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Professional Engineering for the
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## BUSINESS OPPORTUNITIES

Use this Classified Advertising Section for bringing business needs or opportunities to the attention of men associated in administrative, executive, management, sales and responsible technical, engineering and operating capacities within the oil industry.

**PETROLEUM WEEK**

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### PETROLEUM WEEK REPRESENTATIVES

**Atlanta 3** — W. H. Kearns
801 Rhodes-Haverty Bldg.
Walnut 5778

**Boston 6** — Edward A. Callahan, Jr.
350 Park Square Bldg.
Hubbard 2-7160

**Chicago 11** — G. L. Hackley, Jr.
W. F. Holbrook
520 North Michigan Avenue
Mohawk 4-5800

**Cleveland 15** — J. E. MacArthur
1510 Hanna Bldg.
Superior 1-7000

**Houston 25** — David G. Sawyer
724 Prudential Bldg.
Jackson 6-1281

**Los Angeles 17** — Peter S. Carberry
1125 W. Sixth St.
Madison 6-9351

**New York 36** — Edward A. Callahan, Jr.
Donald R. Thompson
330 West 42nd Street
Longacre 4-3000

**Philadelphia 3** — W. A. Potter
Architects Building
Rittenhouse 6-0670

**San Francisco 4** — William C. Woolston
60 Post Street
Douglas 2-4600

**Tulsa 19** — J. A. Hartley
209 Constantine Bldg.
601 South Boston
Gibson 7-7767

**England, London E.C.4** — Herbert Lagler
McGraw-Hill Co., Ltd.
95 Farrington St.

## Other Oil Industry Personnel Changes:

| Company: | To: | From: |
|---|---|---|
| **Anschutz Drilling Co.** | | |
| E. W. Unruh | Drilling supt, Casper | |
| Joe Gardenhire | Business rep, Casper | |
| **Ashmore & Elwell** | | |
| Derald J. Lebow | Consultant, Midland | Geologist, Midland, Kerr-McGee Oil Industries, Inc. |
| **British-American Oil Producing Co.** | | |
| Edmund E. McCurtain | Dist eng, southern div, Houston | Actg dist eng, southern div, Houston |
| **Delta Tank Mfg Co.** | | |
| Ted G. Davis | Sales eng, Baton Rouge, La. | |
| **Elgen Corp.** | | |
| Darrell G. Seal | Mgr, Ft. Morgan (Colo.) office | |
| **C. N. Flagg & Co., Petroleum Contracting Div** | | |
| David P. Schofield | Eastern field rep | Atlantic Refining Co. |
| **General Petroleum Corp.** | | |
| George F. Wiesmann | Asst to southwest div mgr, marketing div, Temple City, Calif. | |
| E. L. Cook | Craft foreman, Vernon (Calif.) lab | Special lab mechanic, Vernon, Calif. |
| **Honolulu Oil Corp.** | | |
| T. C. (Coleman) Williams | Supt, Wasson dist | Dist pet eng, Wasson |
| R. J. (Bob) Boren | Dist pet eng, Wasson | Pet eng, Wasson |
| **Husky Oil & Refining Co.** | | |
| Arnold Larsen | V-p, finance | Treasurer, asst to exec v-p |
| **Magnet Cove Barium Corp., Drilling Mud Dept.** | | |
| James Carlton | Div sales rep, Shreveport | Dist mgr, Mississippi |
| R. B. Foil | Dist mgr, Mississippi | Sales, service eng, Shreveport |
| James DeBusk | Div sales rep, California | Sales, service eng, Mid-Continent div |
| **Mission Mfg Co.** | | |
| A. E. Higginbotham | Dist sales mgr, New Orleans | Field salesman, South Louisiana |
| Lloyd W. Bahr | Field salesman, Hobbs, N. M. | Sales office, Houston |
| Paul Chisholm | Field salesman, Great Bend, Kan. | Jones & Laughlin Steel Corp. |
| **Phillips Petroleum Co.** | | |
| W. L. Phillips | Dir new plants, joint enterprises div, Bartlesville | Western dist, Odessa |
| R. C. Charles | Div devel eng, Midland | Dist geologist, Albuquerque |
| M. D. Voss | Mgr reservoir div, eco dept, Bartlesville | Asst mgr reservoir div, eco dept, Bartlesville |
| **Pure Oil Co.** | | |
| Bill Carr | Mgr, Caracas (Venezuela) geological office | Dist geologist, Bismarck, N. D. |
| J. W. Pierce | Dist geologist, Bismarck, N. D. | Asst dist geologist, Casper |
| **Reed Roller Bit Co.** | | |
| Dillard R. Thomas | Field eng, West Texas div | Field eng, Louisiana div |
| **Reynolds Mining Corp.** | | |
| Gayle A. Oglesby | Dist geologist, Ft. Smith, Ark. | Geologist, Ohio Oil Co., Midland |
| **Southwest Gas Producing Co.** | | |
| James H. Anderson | Mgr, gas project devel, Shreveport | Mgr, gas supply, Mississippi River Fuel Corp. |
| **Stanolind Oil & Gas Co.** | | |
| John M. Clark | Field eng, Hobbs, N. M. | Field eng, Farmington, N. M. |
| Roy M. Bauer | Field eng, Farmington, N. M. | Eng, Hobbs, N. M. |
| **Union Oil Co. of Calif.** | | |
| Philip Fell | Mgr export, bunker sales, Los Angeles | Mgr export sales |
| R. S. Dowling | Asst mgr cargo, bunker sales, Los Angeles | |
| W. L. Theisen | Asst mgr distributor sales, Los Angeles | |
| W. E. Thompson | Dist sales mgr, Tokyo | |
| W. H. Jamieson | San Francisco rep, export, bunker sales | |
| **Warren-Bradshaw Exploration Co.** | | |
| T. H. Kerlin | Mgr, public rel, Tulsa | Special rep, drilling contract dept, Tulsa |
| A. J. Hale | Asst to mgr public rel, Tulsa | |
| **New ventures—** | | |
| C. L. Coshow | C. L. Coshow Oil Co., Collinsville, Okla. | |
| Harold Harrison, Fred Vinson, Glenn Brock | Central Drilling Co., Fairchild, Ill. | |
| Ralph C. Halbert, William Jennings, Dolphe E. Simic | Juniper Oil & Mining Co., Nevada | |
| John Moulton | Consultant, Midland | Geologist, Humble Oil & Refining Co., Midland |
| M. H. Stekoll | Stekoll Properties, Dallas | |
| J. E. Taylor | Ind broker, Billings, Mont. | Landman, Amerada Petroleum Co. |
| Fred B. Williams, Kemp E. Barley | Pacific Mud Co., Los Angeles | |
| Vernon J. Wilson, Joe McGuire | Mt. Carmel Drilling Co., Mt. Carmel, Ill. | |

# Competition Is Strong—and Growing

EVIDENCE OF COMPETITION in the oil industry has never been more abundant.

This is so in all phases of the business, all the way from exploration to the neighborhood service station. You can't look anywhere without finding or seeing oil companies, or, rather, oil men—for this is a business of people—competing with one another in new ways and in new places.

THE INDEPENDENT PRODUCER is on the move as seldom before. No longer is he restricting his outlook to his own little oil patch. Like his bigger brothers, he is widening his horizons and, in increasing numbers, is even turning his attention overseas. And the same is true of the supply and service companies, whose stores and warehouses are now being spotted throughout the world.

There's even evidence of a competition of a kind not seen since the Shell Group first entered this country and began energetically to build a future in the U. S. Now seeking a foothold here, and apparently already well on the way to doing just that, are the Petrofina interests from Belgium. And, if credence can be placed in rumors—and it can, in this instance—it may not be long before British Petroleum (the former Anglo-Iranian Oil Co.) also is active in this country. Competition across the waters is fast on the way to becoming a two-way street.

PERHAPS THE BEST EVIDENCE, though, of the growing competition in oil is to be had in the current scramble among refiners and marketers to meet the higher-octane fuel requirements of today's high-compression automobile engines.

The gold-painted pumps beginning to blossom at Esso Standard stations throughout an 18-state area are a glittering symbol of this intense competition for the motorists' dollars. So are the special five-grade pumps appearing at Sun stations in Florida. Temporarily, Esso and Sun seem to have gained the spotlight. But this is temporary only—a fact which Esso's president, Stanley C. Hope, was quick to concede when a newsman asked him the other day whether any other oil company had a gasoline anything like the new "Golden Esso Extra."

"As far as I know, no one has," replied Mr. Hope. "But, as you know, this is a competitive industry. While there is some exchange of technical information between oil companies through the American Petroleum Institute, we still have to operate in secrecy on what we are doing in order to keep the competition from calling our plays. In fact, just before I came into this meeting [at which Esso announced its new motor fuel] I took the precaution of looking through all the morning newspapers to make sure one of our competitors had not beaten us with a new gasoline."

IF MORE EVIDENCE is wanted, one may cite, too, the way in which major oil companies are moving in on each other's "territories." The full competitive significance of this will be driven home dramatically quite soon when a giant among them moves into the midwest.

This type of stimulating competition has been good for the industry—and good for the people the industry serves. It's a sharp contrast to the creeping development in some nations where the government, and not competition, has been the dominating factor.

This point should always be given grave consideration before any segment of our industry heads for Washington with any suggestion for government regulation of any other phase of the industry.

# *Three* 125,000 #/HR STEAM GENERATORS

# *by* Vogt AT

# LION OIL COMPANY'S

## BARTON CHEMICAL PLANT

★ The new $30 million Lion Oil Company's Barton Chemical Plant at Luling, La. produces 300 tons daily of essential nitrogen fertilizer materials to boost crop yields and reduce unit production costs on the nation's farms.

**PRINCIPAL DATA, EACH UNIT**

125,000 pounds per hour capacity.

Fusion welded steam and water drums designed for 725 lbs. S.W.P.

Superheater delivers steam at 750°F. total temperature.

Water cooled furnace.

Burners for Gas and Oil fuel.

Vogt offers a complete line of custom built type and package unit type steam generators. Available in bent tube types and straight tube, forged steel sectional header types for solid, liquid, or gaseous fuel burned singly or in combination. Write for bulletins. Address Dept. 24-BPW.

**Henry Vogt Machine Co., Louisville, Ky.**

BRANCH OFFICES:

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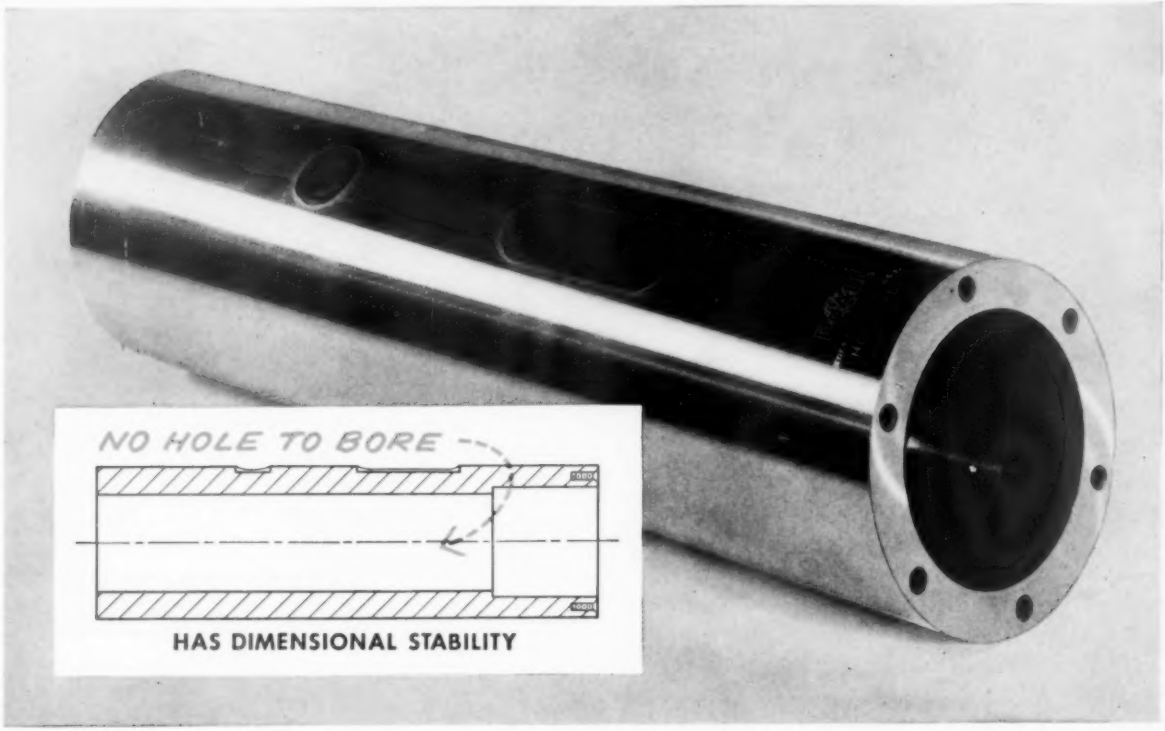


# DoALL switches to TIMKEN® seamless steel tubing —cuts spindle housing cost 26%

THE DoALL Company faced a tough problem in reducing production costs of its precision spindle housing, while retaining the required dimensional stability. Timken Company metallurgists came in, worked with DoALL's engineers and recommended a change from the bar stock previsously used to Timken® seamless steel tubing.

Immediate savings resulted. Machining time was cut. With Timken seamless tubing, the hole was already there. No drilling required. Scrap loss reduced. More parts produced per ton of steel. One of the annealing operations required with bar stock was eliminated.

DoALL and Timken Company metallurgists devised stress-relieving operations to insure complete stability in the finished part. By changing to Timken seamless steel tubing, DoALL's production cost per housing was cut 26% and thorough lab tests proved there were no dimensional changes in the finished part.

Timken Company metallurgists will gladly work with you on your hollow cylindrical parts jobs, to help you make important production savings with Timken seamless steel tubing. The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable address: "TIMROSCO".

YEARS AHEAD—THROUGH EXPERIENCE AND RESEARCH

SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS STEEL TUBING